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NOT A BOOM

BUT CONDITIONS ARE VERY SATISFACTORY

And Prospects Bright.—Pig Iron Sales Numerous and Prices Firmer.—Active Bar Market.

The first half of the year, which has just closed, has been one of the most prosperous in the history of the iron trade. While there have been no boom conditions, the production has been exceedingly heavy and good prices have prevailed, but extreme quotations have not been made. The outlook, for the second half is very favorable. Reports indicate that while crops will not be extraordinary, they will be fully up to the average and there is no reason for believing that prosperity will be checked.

Pig Iron Is Strong. The slight hesitancy noted last week on the part of pig iron buyers in some sections, due to the dissolution of the southern agreement, has disappeared. Prices are steady and there has been considerable contracting. Buying has been brisk in the Chicago district, where 100,000 tons of varied grades of pig iron have been ordered. A rather unusual contract was for a large tonnage of malleable Bessemer and Lake Superior charcoal closed with a northwestern malleable interest for three years, prices to be adjusted periodically. The Bessemer Pig Iron Association has sold 30,000 tons to independent interests for the last quarter, and there is very little Bessemer to be obtained. The demand for basic also continues good and among the sales for the past week were 12,000 tons to the American Bridge Co. The price of ferro-manganese is again advancing, and $90 is quoted for August delivery.

Bar Market Is Active. Numerous contracts for sheet bars at the new price, $29 per ton, have been made. The demand for iron and steel bars is active, and sales aggregating some 75,000 tons of steel are reported by eastern mills. Although no large contracts have been placed for structural material, mills are very busy and contractors are urging delivery. The settlement of the strike of structural steel workers at St. Louis has permitted the resumption of work on numerous buildings in that city.

Plates and Sheets Strong. The plate market is stronger than for some time. The skelp market is quiet, but mills are busy on old contracts. Delivery of billets and wire rods is slow, and there is still a scarcity of sheet bars. The steel companies are specifying heavily and railroads are placing orders freely, among the large ones being 1,500 steel cars for the Lehigh valley. Many sheet mills are closed for repairs, but will resume as soon as possible, as they are already far behind on delivery. Some independents have signed the Amalgamated scale, and it is expected that others will do so at an early day. The effect of the recent investigation of the meat industry on the tin plate market is in doubt. It is probable that the assurance of a rigid investigation will soon restore confidence of buyers so that there will be no permanent diminution in the demand from canning interests.

Merchant Pipe Is Weak. Prevailing prices of merchant pipe are low. This product seems to be the weakest in the finished lines. There is lively demand for locomotive boiler tubes. No diminution in orders for wire products is noted.

Contracting for Coke. The coke market is in good condition, and some further heavy contracting has been done by furnace interests. The purchase of a small tonnage of heavy melting scrap by the Carnegie Steel Co., has attracted some attention, but the market for old material shows little, if any, improvement, reports generally indicating that it has not been benefited by the stronger demand for bars and pig iron.

THE AMALGAMATED SITUATION.

Between 4,000 and 5,000 members of the eastern division of the Amalgamated association went on strike July 1, because their demands for a 12½ per cent advance in wages were not granted after 30 days' notice had been given. The companies which have already signed the amalgamated scale are those of the Western Bar Iron Association, as well as mills of the Republic Iron & Steel Co.; the Union works of the American Sheet & Tin Plate Co.; the Western Iron Mill Co. of Denver, Colo.; the Greenwald Iron Co., Louisville, Ky.; the Newport Rolling Mill Co., Newport, Ky.; the Western Steel Car & Foundry Co., Anniston, Ala.; the Empire Iron & Steel Co., Niles, O.; Westerman & Co., Lockport, N. Y.; the American Rolling Mill Co., Muncie, Ind.; the Sheffield Rolling Mill Co., Sheffield, Ala., Zug & Co., Pitstburg, A. M. Byers Co., Pittsburg, lessee, Clearfield Steel & Iron Co., Clearfield, Pa.; Brown & Co., Pittsburg; and the Howe-Brown plant of the Crucible Steel Co. It is reported that several of the independent sheet and tin plate manufacturers have signed scales with local committees, but these agreements have not yet reached the Amalgamated headquarters.

RAILROAD PROPERTY REPURCHASED.

(Special Telegram.)

New York, July 3.—The Tennessee Coal, Iron & R. R. Co., has repurchased the Birmingham & Southern R. R. from Louisville & Nashville & Southern Ry. The property was sold to late owners in 1900 for $1,100,000. The line is 100 miles long and connects the properties of the company. J. G. Moore, president of the road, has resigned to become superintendent of coal properties of the Sloss-Sheffield Co. He will be succeeded by John A. Topping.

The corporation bought 10,000 tons Bessemer pig iron, September delivery, at $17.25.

THE WEEK IN IRON CENTERS.

PITTSBURG.

Close of a Prosperous Half Year with Bright Prospects for Second.

OFFICE OF *The Iron Trade Review*,
521 PARK BUILDING, July 3.

The first half of the year is over and with it one of the most prosperous periods in the iron and steel industry of the country has passed into history. With the passing of this period, another, which, from all present indications, will be just as prosperous, has started most auspiciously. The feature of the situation is the strength shown in all branches of the trade, with the possible exceptions of the pipe and scrap business. While business in the former line is plentiful from a tonnage standpoint, prices remain low and there is no incentive to book ahead to any great extent.

Instead of the usual lull which is always expected at this time of the year, mills shutting down for repairs, furnaces going out of blast for repairs, and other similar incidents which are accepted as routine performances during July and August, there is no indication of a slackening of the pace at which things have been going and no tendency is shown to follow the usual precedent. The strength of the market is unusual for the middle of the summer.

The valley furnaces are sold up to date on their production and many of them are practically out of the market for the remainder of the year. Pig iron prices are firm at $17.75 for Bessemer and $17 to $17.25 on basic and northern foundry is quoted strong at $16.50. There are no stocks at furnaces, Bessemer ore is scarce, and furnaces not having contracts will have difficulty.

In finished lines the plate mills are in better shape at the present time, from the standpoint of tonnage on the books than they have been for several months. There is a good demand for structural material, particularly heavy shapes. The steel car building companies are beginning to take on business for next year and the rail mills have already booked for next year's delivery about 20 per cent of their tonnage capacity. The Carnegie Steel Co. still has about one month's run for 1906 delivery, but at the rate this has been taken down during the past month, another four weeks will see it sold up for the year. Steel bars are steady and prices are being maintained in this district and bar iron has shown an improvement.

The scarcity of semi-finished material is a feature which cannot be overlooked and it is estimated that on sheet bars alone the American Sheet & Tin Plate Co., the largest consumer and a constituent company of the steel corporation, is getting only about 60 per cent of its requirements. Bessemer and open hearth billets are scarce and two of the leading producers have nothing to offer in the open market, being kept busy supplying material on contracts and taking care of their own requirements.

Labor troubles in the Pittsburg district will not cause any appreciable difficulties, the leading sheet and tin plate interest having signed up for another year beginning July 1 with the Amalgamated and several independents have already done so although at the joint conference they failed to agree. The only trouble now pending is a strike by members of the eastern division of the Amalgamated association in iron mills east of the Allegheny mountains and New England where a demand for an advance of 12½ per cent has been made. About 4,000 men are affected.

Pig Iron.—Any hesitancy that may have been felt last week in the buying of northern foundry iron on account of the dissolution of the southern agreement has passed and northern No. 2 is strong at $16.50, valley furnaces, while the southern grade is quoted at $13.25 to $13.50, Birmingham. A tremendous tonnage of southern foundry has been sold during the past three months and most of it went at figures between the quotations given here. Northern Bessemer is extremely scarce and there is practically none to be had for July and but very little for August delivery. The price is firm at $17.75, valley furnaces and we note the sale of 2,300 tons in four lots, 1,000, 500, 500 and 300 each at this price. Where there is any loose Bessemer held for prompt shipment it is being retained for fancy prices and in carload lots we note two sales at $18. Basic iron is also very strong at $17 to $17.25 and there has been one sale of 2,500 tons at $17.50, valley furnace, for delivery during the third quarter, September to December. There have been but few transactions in forge iron and we quote $16.36, delivered Pittsburg. The Bessemer Pig Iron Association, which has been a very important factor in the pig iron market ever since its organization, now has lost a great deal of its strength and its conservative policy will be missed since a majority of the furnaces controlled by it have lately made other arrangements and the completion of the Bessemer plant of the Youngstown Sheet & Tube Co., at Youngstown will take a large percentage of the tonnage of four stacks. The fact that independent furnaces not holding ore properties or not being covered by long term contracts for their supply are having difficulty in securing high grade Bessemer ores has lately attracted considerable attention and as the leading sellers have contracted for the disposition of the output of mines for the season and running up to May 1 next year, there is but little likelihood of an improvement of this field before that time. Already 25c above the season price has been paid. On pig iron we quote as follows:

Bessemer Valley	17.75
Bessemer, Pittsburg	18.60
No. 1 Foundry, Pittsburg	17.60 to 17.85
No. 2 Foundry, Pittsburg	17.10 to 17.35
Gray Forge, Pittsburg	16.35
Basic, Valley	17.00 to 17.25
Basic, Pittsburg	17.85 to 18.10

Ferro-Manganese.—The market on ferro-manganese, foreign, 80 per cent, has tightened to a considerable extent during the past few weeks and all quotations now being made are subject to cable confirmation. For prompt shipment from the Atlantic seaboard we quote $90 per ton and the same quotation is made for August delivery. In anticipation of still further advances in price, there has been considerable business placed during the week under review.

Steel.—Bessemer billets are scarce and the ordinary soft billets, 4 x 4, are quoted $27 to $27.50 and very few are to be obtained at this figure. Open-hearth billets are quoted $28.50 to $29. Before July 1 independent consumers of sheet bars contracted freely for their future requirements of the third quarter at the advance, $29, Pittsburg, and this price is being generally quoted. One or two interests refused to come in on the advance before the opening of the quarter, deciding to take their chances in the open market.

Skelp.—This market continued extremely quiet and there have been but few inquiries that might result in new business. Skelp mills are busy on old contracts against which liberal specifications are being made, but, with the prevailing low prices being made on pipe, manufacturers of the latter are not particularly anxious to assume more obligations than will assure continued operation of their plants. On skelp, narrow widths and light gauges, we quote as follows:

Bessemer grooved, 1.57½c to 1.60c; sheared, 1.65c to 1.70c; basic grooved, 1.60c to 1.65c; sheared, 1.65c to 1.70c; iron skelp, grooved, 1.65c to 1.70c; sheared, 1.80c to 1.85c.

Hoops and Bands.—There has been some new business in hoops but it has

not been to any large tonnages and the market is quiet but firm. We quote:

Hoops, 1.90c in carload lots, and 2c on less than carload lots; bands, 1.50c base, half extras as per standard steel card. Prices f. o. b. Pittsburg.

Muck Bar.—In the absence of any specific transactions on which to base a market price, we make a nominal quotation of $29 Pittsburg, on all pig muck bar. As far as can be learned there has been no muck bar offered and no inquiries made.

Rails and Track Material.—The actual sales of rails by mills in this district have not been particularly heavy, holding below the average week, and the inquiries have been comparatively light. The leading interest sold 10,000 tons for 1907 delivery to the St. Louis & San Francisco; 1,000 to the Wabash; 2,300 to the Erie, and 2,500 to the Washington, Idaho & Montana and it is reported that the Lackawanna Steel Co. has sold 10,000 to the Wabash for use in the Canadian extension. The demand for light rails is very good. On railroad spikes, both iron and steel, the demand has been unusually heavy and mills are not quoting for delivery much before September and are holding firm for $2.20 to $2.25 and a large amount of business offered at prices but slightly lower has been refused. We quote:

Fifty pounds and heavier, 500-ton lots, $32; light rails, 16 pounds, $31; 20 pounds, $29.50; 25 to 45 pounds, $29.50; angle bars for standard sections, 1.50c; spikes, $2.15 to $2.20.

Structural Material.—The demand for structural material is good and inquiries are now out for four buildings in St. Louis, estimated to require about 10,000 tons. Otherwise the new business has been general and not confined to any particular district or industry. Many buyers of structural material are now specifying heavily against their contracts and urging delivery, having held off to some extent recently on requirements on account of labor troubles with erectors and structural iron workers. The demand for heavy shapes is particularly heavy and quite a tonnage of plates is going with them. We quote:

Beams and channels, 15 in., and under, 1.70c; over 15 in., 1.80c; zees, 1.70c; tees, 1.75c; angles from three to six inches, inclusive, 1.70c; over six inches, 1.80c; universal and sheared plates, 6¼ inches and wider, 1.60c base.

Plates.—The plate market is strong and mills are in better shape at the present time as far as tonnage on the books is concerned than they have been for a long time past. Negotiations are on for shapes and plates for two large freighters, in addition to the material for nine already closed. The steel car companies are specifying very freely and are getting in line to take on business for next year. The Lehigh Valley road has closed for 1,500 steel cars for 1906 delivery, the Standard Steel Car Co., getting 1,000, and Cambria, 500. The steel corporation is preparing inquiries for a large number of steel cars for its Minnesota ore roads. We quote:

Tank plate ¼ inch thick, 6¼ to 100 inches, 1.60c f. o. b. mill, Pittsburg. Extras are as follows per 100 pounds, boiler and flange steel plates, 0.10c; A. B. M. A. and ordinary firebox steel plates, 0.20c; still bottom steel, 0.30c; marine steel, 0.40c; locomotive firebox steel, 0.50c; all sketches excepting straight taper plates, varying not more than four inches in width at ends, narrowest end not being less than 30 inches, 0.10c; complete circles, 0.20c. Plates in width over 100 inches up to 110 inches, 0.05c; over 110 inches up to 115 inches, 0.10c; over 115 inches up to 120 inches, 0.15c; over 120 inches up to 125 inches, 0.25c; over 125 inches up to 130 inches, 0.50c; over 130 inches, 1.00c. Gauges under ¼ inch to and including 3-16 inch plates on thin edges, 0.10c; under 3-16 inch to and including No. 8, 0.15c; under No. 8 and including No. 9, 0.25c. Five cents extra for less than carloads. Terms net cash in 30 days.

Sheets.—A majority of the sheet mills of the country are closed down during the greater part of the week of July 4 for the annual repairs but will resume as soon as possible, on account of the pressure being brought for delivery. It remains to be seen what the independent manufacturers who have not signed the Amalgamated scale will do, but it is thought most of them will sign as soon as they are ready to resume. At those plants that have been operated non-union there will, of course be no difference. Several of the independents have already signed the agreement for the year beginning July 1. The sheet business still continues very brisk. We quote:

Black steel sheets, box annealed, cold rolled, one pass: Nos. 11-12, 2.10c; Nos. 13-14, 2.15c; Nos. 15-16, 2.20c; Nos. 17-21, 2.25c; Nos. 22-24, 2.30c; Nos. 25-26, 2.35c; No. 27, 2.40c; No. 28, 2.50c; No. 29, 2.65c; No. 30, 2.75c. Galvanized, Nos. 10-11, 2.45c; Nos. 12-14, 2.55c; Nos. 15-16, 2.65c; Nos. 17-21, 2.80c; Nos. 22-24, 2.95c; Nos. 25-26, 3.15c; No. 27, 3.35c; No. 28, 3.55c; No. 29, 3.80c; No. 30, 4.05c. Corrugated roofing, $1.75 per square for No. 28 painted, 2½-inch corrugation; $3.10 per square for No. 28 galvanized, 2½-inch corrugation. Quotations f. o. b. Pittsburg on large lots.

Tin Plate.—Just what effect the recent expose of the meat canning industry in Chicago will have on the tin plate business is problematic and will not become apparent much before the middle or latter part of August, but it is expected that for a time at least the influence of the report to congress of conditions found at Chicago will be felt. The meat packing industry consumes, on an estimate, 1,000,000 boxes of tin a year. Reports from the canning companies are favorable on crops and an immense business with these interests will follow good crops. New business at this time is not heavy, consumers having covered for their requirements before the recent advance. We quote:

$3.75 per base box, f. o. b. Pittsburg, 14 x 20 100-pound cokes, terms 30 days, less two per cent off for cash in ten days.

Merchant Pipe.—While tonnages are good and considerable new business is being placed, prices are very low and pipe makers are not over anxious to assume obligations under the conditions, much in excess of the amount necessary to insure continued operations. At the present time there is but little being done in the line pipe end of the business. The extreme discount, to carload buyers is 81 per cent and five off, while to less than carload buyers the discount would be less. We quote the official discounts on pipe, consumers' carloads, with jobbers' carloads one point higher:

	Steel		Iron	
Consumer's Carloads	Black	Galv.	Black	Galv.
⅛ and ¼ inch	71	55	67½	51½
⅜ inch	73	59	69½	55½
½ inch	75	63	71½	59½
¾ to 6 inches	79	69	70	66
7 to 12 inches	74	59	71	55½
EXTRA STRONG PLAIN ENDS.				
⅛ to ⅜ inch	64	52	60½	48½
½ to 4 inches	71	59	67½	55½
4½ to 8 inches	67	55	63½	51½
Double extra strong plain ends, ⅛ to 8 inches	60	49	56½	45½

Boiler Tubes.—The demand for boiler tubes is seasonable, with business neither above nor below the ordinary. For locomotive boiler tubes there has been a brisk demand from the railroads and engine builders and prices are firm. We quote:

	Steel	Iron
1 to 1½ inches	50	45
1¾ to 2¼ inches	62	45
2½ inches	64	50
2¾ to 5 inches	70	57
6 to 13 inches	62	45

Less than carload lots two points less.
2½ inches and smaller, over 18 feet, 10 per cent net extra.
2¾ inches and larger, over 22 feet, 10 per cent net extra.

Merchant Bars.—The improvement in bar iron noted last week has continued throughout the week under review and a fair tonnage has been placed at prices that have prevailed for some time past. As far as can be learned the 1.50c base has not been shaded in the Pittsburg district, reports to the contrary, notwithstanding, and we continue to quote:

Common iron bars, 1.55c, Pittsburg, in carload lots, 1.60c in less than carloads; for western shipment 1.50c base Pittsburg; Bessemer steel bars, 1.50c; plow and cultivator, 1.50c net; channels, angles, zees and tees, under three inches, 1.60c, all f. o. b. Pittsburg. The following differentials are maintained on steel: Less than 2,000 pounds, 0.10c advance; less than 1,000 pounds, of a size, 0.30c advance.

Steel Bars.—While there has been some steady business during the week it is not in large volume and the market is quiet although strong and prices are being maintained. We quote:

Cold rolled and ground shafting, 50 per cent off in carload lots, and 45 off in less than carloads, delivered in base territory; tire steel, 1.70c to 1.80c; open-hearth spring steel, 2.25c to 2.50c; sleigh shoe flat, 1.50c to 1.55c; smooth finished machinery steel, 1.90c to 2c; toe calk, 2.05c to 2.10c. The price of planished and machine straightened tire is 1.70c base half extras as below. Iron finished tire up to 1½ inch by ½ inch, 1.65c base half extra tire list. Iron finished tire up to 1½ inch by ½ inch and over to be sold on regular bar basis of 1.50c base; half extra steel card.

Wire and Wire Nails.—The demand for wire and wire nails still continues and one large producer is authority for the statement that during his 14 years of experience he has not known the demand and prices to be so well maintained during the summer months. On this account and in order to accumulate a stock before closing down, one producer deferred the annual shut down until July 15 in order to take care of the business during the time the mills are closed. Barb and fence wire and wire nails are particularly strong. We quote:

Wire nails, jobbers' carload lots, $1.85; retailers' carload lots, $1.90, and less than carload lots, $2; painted barb wire, $2 for jobbers in carloads; retailers in carloads, $2.05, and less than carloads, $2.15, with 30c for galvanizing; plain wire, $1.70 to jobbers and $1.75 by carload.

Coke.—Some heavy contracts covering furnace requirements for the last half of the year have been made during the week under review and both foundry and furnace coke are in strong demand, there being but very little furnace coke obtainable for spot delivery. This is accounted for to some extent by the fact that new operations in the Connellsville region have not started as scheduled and eastern furnaces have been heavy buyers. We quote furnace coke $2.45 to $2.55 and foundry $2.70 to $2.85. The estimated production of the Connellsville region during the week ending June 23 was 272,523 tons and of the lower Connellsville region 103,989 tons.

Old Material.—The steel corporation has purchased about 3,000 tons of heavy melting scrap at $16 delivered and within a short time may be in the market for more but this has not been decided upon at this time. There have been a few sales at this price but the scrap market is anything but active and prices remain unchanged. We quote, gross tons, delivered: Heavy melting stock, $15.50 to $16; No. 1 cast scrap, $15 to $15.50; cast borings, $8.50 to $9; bundled sheet scrap $13.50; malleable scrap, $15.50; No. 1 railroad wrought, $17; low phosphorus scrap, $18 to $18.50; wrought turnings, $11 to $11.50; busheling scrap, $14 to $14.50; iron axles, $25.50 to $26; old rails, rerollers, $17.50.

CHICAGO.

Heavy Buying of Southern Iron. — Prices are Advanced.

Office of *The Iron Trade Review*,
1142 Monadnock Block, July 3.

The decline on southern iron due to the dissolution of the southern furnace association culminated last week in a heavy buying movement, contracts for upwards of 100,000 tons already having been closed for second half delivery. Nearly all of this tonnage was purchased on the basis of $13.00 Birmingham although as high as $13.25 was paid for a few favored brands. On account of the heavy tonnage booked not only in this district but the east as well, the Republic Iron & Steel Co. and the Tennessee Coal, Iron & R. R. Co., late last week advanced prices 50 cents a ton and are now holding all brands at a minimum of $13.50 Birmingham for No. 2. Other large interests are likewise maintaining this basis, but the volume of buying has not been curtailed despite the advance. A large Wisconsin malleable foundry also closed for its requirements of malleable Bessemer and charcoal iron for a term of years with two northern furnace operators. Contracts for steel for lake ship builders continue to be placed, the Illinois Steel Co. having booked another order for one boat amounting to 3,700 tons of plates and shapes. Mid-year repairs have necessitated the closing of the mills of the Inland Steel Co. for a period of two weeks and some of the iron mills are likewise idle for the same reason. None of the mills of the Illinois Steel Co. will shut down, however, as the pressure for early steel deliveries is too great.

Pig Iron.—Heavy liquidation of pig iron followed the stiffening of prices last week. Buying was very general from all branches of the trade in the west, the total sales being estimated at close to 75,000 tons. Most of this tonnage went to southern furnaces, and was closed at prices ranging from $13 to $13.50 Birmingham for No. 2 foundry. For the standard grades of southern iron, the market seems well established at the latter price, although scattering furnaces are still quoting below it. It is a noticeable fact that few of the large consuming interests contracted very heavily for their wants during the recent depression; and even those foundries that closed shaded their inquiry from 25 per cent to 50 per cent. The International Harvester Co. has not bought a pound of iron since its purchase of 10,000 tons of southern iron and 6,000 tons of standard Bessemer two weeks ago, and asserts it is not in the market for any iron at present prices. One of its officials has just returned from a trip through the iron producing districts in the south and reports that stocks are so much larger and other conditions so much more irregular than on his previous trip a month ago as to justify him in the belief that even present prices will not be long maintained. Nevertheless, sellers of southern iron are very optimistic over the outlook and confident in the upward trend of the market. The melt of iron is exceedingly heavy, stocks at furnaces, they state, are low, production has decreased, and the future is assured by glowing crop reports. The Pioneer furnaces of the Republic Co. were withdrawn today from the market, a strongly bullish fact in the light of recent events. Northern furnaces have shared, though to a lesser extent, in the brisk trading of the past week. Malleable Bessemer is a close second to foundry grades in the aggregate tonnage closed, a number of belated melters coming in on the present basis. The local product is much stronger as a result of the practical withdrawal from the Chicago market of Ohio and valley irons, and $18 Chicago for either No. 2 foundry or malleable Bessemer is absolutely the best that can be done. A most interesting contract for malleable Bessemer and Lake Superior charcoal was closed last week with a northwestern malleable foundry. It provides for deliveries extending over a period of three years, and is for a large tonnage of iron, prices of which are to be adjusted periodically. All northern furnaces are well sold ahead, scarcely any having more than

two months' output for the last half to dispose of. For this reason, higher prices are expected at an early date. Our quotations, revised, are as follows:

Lake Superior charcoal	$19.00
Northern Foundry No. 1	18.50 to 18.75
Northern Foundry No. 2	18.00 to 18.25
Northern Foundry No. 3	17.50 to 17.75
Northern Scotch Foundry	18.75
Ohio Strong Softeners No. 1	18.80
Ohio Strong Softeners No. 2	18.30
Southern Foundry No. 1	17.40 to 17.65
Southern Foundry No. 2	16.90 to 17.15
Southern Foundry No. 3	16.40 to 16.65
Southern Foundry No. 4	15.90 to 16.15
Southern No. 1 Soft	17.40 to 17.65
Southern No. 2 Soft	16.90 to 17.15
Southern Gray Forge	15.40 to 15.65
Southern Mottled	15.15 to 15.40
Southern Silveries (4 percent to 6 percent Silicon)	17.90 to 18.40
Jackson Co. Silveries, 8 to 10 percent Silicon =	23.30
Alabama and Georgia Car Wheel	23.90 to 24.40
Malleable Bessemer	18.00 to 18.25
Standard Bessemer	19.30
Basic Iron	18.85

Billets.—The local market is extremely strong on all forms of intermediate steel. Deliveries of billets and wire rods are slow, Chicago producers being so crowded with orders that they are indifferent to further tonnage. Some of the local and nearby mills are shutting down for repairs which will further delay shipments. We quote wire rods $33 Pittsburg, sheet bars, $29 Pittsburg, and forging billets, $36 Chicago.

Iron and Steel Bars.—Eastern mills report an active demand for steel bars for deliveries in the last half, the aggregate tonnage being close to 75,000. Only a small portion of this came from consumers in the west. Bar iron is livelier than it has been in several weeks, and from the present inquiry and volume of specifications an active buying movement is anticipated. Prices are very strong. We quote carload lots, mill shipments, Chicago delivery, as follows:

Bar iron, 1.66½c; soft steel bars and bands, 1.66½c, half extra; soft steel angles, less than 3 x 3, 1.76½c; hoops, 2.06½c base, full extras; old rail stock, 1.65½c. Jobbers report a good demand from stock, with prices firm. We quote bar iron, 2.10c, full extras; soft steel rounds and squares, 3 inches and larger, $2 per 100 pounds base; flats, 2 inches to 4 inches by 1⅛ inch and larger, $2 per 100 pounds base; flats, 2 inches to 4 inches by 1⅛ inch and larger, $2 per 100 pounds base; flats, 4½ inches x 5 inches and 6 inches x 5-16 inch and thicker, $2 per 100 pounds base; all ovals, half rounds, $2 per 100 pounds base; steel bands, $1.85 to $1.95 half extras; soft steel hoops, $2.30 to $2.40 full extras. Other sizes not mentioned above, $1.85 per 100 pounds base, plus half extras.

Sheets.—The demand for sheets continues at the high water mark maintained for the past several months. Fabricators are especially insistent about deliveries which have not been satisfactory of late owing to the crowded condition of mills. The best that can be done now on black sheets is six to eight weeks, and on galvanized, eight to ten weeks. The Inland Steel Co. has shut down its Indiana Harbor plant for repairs and will not start again before the 15th. Prices are very strong, but without change. We quote mill shipments, Chicago delivery, as follows:

Nos. 8, 9 and 10, 1.96½c; Nos. 11 and 12, 2.01½c; Nos. 13 and 14, 2.06½c; Nos. 15 and 16, 2.16½c; box annealed; Nos. 18 and 20, 2.36½c; Nos. 22 and 24, 2.46½c; No. 26, 2.51½c; No. 27, 2.56½c; No. 28, 2.66½c; No. 29, 2.81½c; No. 30, 2.91½c. Jobbers' prices on less than carload lots from store are as follows: No. 10, 2.20c; No. 12, 2.25c; No. 14, 2.30c; No. 16, 2.40c; Nos. 18 and 20, 2.65c; Nos. 22 and 24, 2.70c; No. 26, 2.75c; No. 27, 2.80c; No. 28, 2.85c; No. 30, 3.30c.

Galvanized sheets, mill shipments, are as follows: Nos. 10 and 11, 2.56½c to 2.61½c; Nos. 17 and 21, 2.91½c to 2.96½c; Nos. 22 and 24, 3.06½c to 3.11½c; Nos. 25 and 26, 3.26½c to 3.31½c; No. 27, 3.46½c to 3.51½c; No. 28, 3.71½c; to 3.76½c; No. 29, 3.91½c to 3.96½c; No. 30, 4.16½c to 4.21½c. From store, prices on less than carload lots are as follows: Nos. 10 to 20, 3.10c to 3.20c; Nos. 22 and 24, 3.25c to 3.35c; No. 26, 3.45c to 3.55c; No. 27, 3.65c to 3.75c; No. 28, 3.85c to 3.95c; No. 30, 5.05c to 5.15c.

Plates.—The tone of the market is considerably improved, orders for sheared plates being freer and heavier than in several weeks. The American Ship Building Co. has ordered the steel for another boat, the specifications calling for 3,700 tons. This freighter will be built at the Superior ship yard. Universal plates continue in good demand, the situation being improved by the fact that early deliveries can now be obtained. There is an active movement from local warehouse stocks. Prices from mill and store are very firm. We quote mill prices, Chicago delivery, as follows:

Tank steel, ¼ inch and heavier, up to 100 inches wide, 1.76½c base; flange steel, 1.86½c base; marine steel, 1.96½c base; all full extras. Plates 3-16 inch thick, $2 extra; gauges, 7 to 8, $3 extra; No. 9, $5 extra. Less than carload lots, $5 extra. We quote from local stocks: tank steel ¼ inch and heavier, up to 72 inches wide, 2c to 2.10c; 72 inches to 96 inches wide, 2.10c to 2.20c; 3-16 inch up to and including 60 inches wide, 2.10c to 2.20c; 3-16 inch 72 inches wide, 2.35c to 2.45c; No. 8, up to 60 inches wide, 2.15c to 2.25c; flange steel, 25c extra; heads, 25c extra.

Structural Steel.—No contracts of any moment have been placed this week for structural shapes. Specifications, however, are very heavy and deliveries slow. Prices are firm, mill shipments, Chicago delivery, being quoted as follows:

Beams and channels, 3 to 15 inches, inclusive, 1.86½c; angles, 3 to 6 inches, 1.86½c; angles, larger than 6 inches, on one or both legs, 1.96½c; beams, larger than 15 inches, 1.96½c; zees, 3 inches and over, 1.86½c; tees, 3 inches and over, 1.91½c, with the usual extras for cutting to exact lengths, punching, coping, bending, or other shop work.

Quotations on lots from store are as follows: All angles three inches and larger, including six inches, $2.25 per 100 pounds base; angles over six inches, $2.35 per 100 pounds base; tees, three inches and larger, $2.30 per 100 pounds base; beams, three inches to fifteen inches, inclusive, $2.25 per 100 pounds base; beams, eighteen inches and larger, $2.35 per 100 pounds base; channels, three inches and larger, $2.25 per 100 pounds base.

Rails and Track Supplies.—Contracting for track supplies for next year's delivery grows apace. About 10,000 tons of spikes have been taken by the local mill, together with a large tonnage of bolts and nuts. Light rails are also in good demand, orders for early shipment now being transferred to eastern mills of the steel corporation because of the inability of the Illinois Steel Co. to fill same. This mill is filled up for the next four months. Prices are without change, and we quote standard sections f. o. b. mill, open-hearth rails, $29; Bessemer, $28; light rails Bessemer steel 30 to 45-pound sections, $28; 25-pound, $29; 20-pound, $30; 16-pound, $31; 12-pound, $32; and lighter sections down to eight pounds, $29 to $41, all f. o. b. mill. Track supplies are quoted as follows: Angle bars, 1.50c to 1.75c; spikes (for quick shipment) 2.15c to 2.25c; (for forward deliveries), 2c; track bolts (for quick shipment) 2.65c to 2.75c base; square nuts (for forward deliveries) 2.50c.

Cast Iron Pipe.—Current transactions are entirely for small lots. The market is without any particular interest, except that deliveries are slow. All pipe makers have well filled order books for the balance of the year. We quote, Chicago delivery, four-inch water pipe, $32.50; six and eight-inch pipe, $31; 10-inch and larger, $30; gas pipe, $1 extra.

Boiler Tubes.—Specifications for tubes are very active. New business

is also good, present prices proving attractive on season contracts. We quote as follows:

	Steel	Iron	Seamless
1 to 1¼ inches	46.35	43.35	53.35
1¼ to 2¼ inches	58.35	43.35	40.35
2½ inches	60.35	48.35	43.35
2¼ to 5 inches	68.35	55.35	
2¾ to 4½ inches (Seamless)			50.85
6 to 13 inches	58.35	43.35	

Less than carload lots, from store, as follows:

	Steel	Iron	Seamless Steel
1 to 1¼ inches inclusive	40	35	42½
1¼ to 2¼ inches, inclusive	50	35	35
2½ inches, inclusive	52½	35	30
2¾ to 5 inches, inclusive	60	47½	42½

Merchant Pipe.—No change is noted either in the volume of new business or specifications, both of which are characterized as good by local sellers. Prices are without change at 79.35 per cent discount Chicago for ¾ to 6-inch black steel pipe, and 69.35 Chicago for galvanized pipe. Local jobbers continue to ask 76 to 77 per cent discount on the base sizes ¾ to 6-inch black steel pipe.

Wire Products.—The dullness in the wire trade that is usually experienced in midsummer has scarcely been felt this year. Contracting is especially heavy for smooth wire, independent fence manufacturers and other fabricators placing large orders for the last half. Other branches of the business are sharing proportionately in the heavy demand. Deliveries are slow, mills not expecting to be even with their order books when the fall trade commences. We quote Chicago delivery, as follows:

Wire nails, $2; painted barbed wire, $2.15; galvanized barbed wire, $2.45; smooth annealed wire, $1.85; smooth galvanized wire, $2.15; polished staples, $2.15; galvanized staples, $2.40. Carload lots to retailers, 5 cents higher than above prices; less than carload lots, 15 cents higher.

Merchant Steel.—Specifications from implement manufacturers for third quarter delivery are to full contract requirements. Good crops being practically assured, these interests are laying in large stocks of material in anticipation of a heavy demand for agricultural machinery. The outlook is very bright, and mills are operating to their fullest capacity. Prices are unchanged as follows:

Planished or smooth finished tire steel, 1.86½c; iron finish, up to 1½ x ½ inch, 1.81½c; iron finish, 1½ x ½ inch and larger, 1.66½c, base; channels for solid rubber tires, ¾ to 1 inch, 2.16½c, and 1⅛ inch and larger, 2.06½c; smooth finished machinery steel, 1.91½c; flat sleigh shoe, 1.71½c; concave and convex sleigh shoe, 1.96½c; cutter shoe, 2.35c; toe calk steel, 2.21½c; railway spring, 1.86½c; crucible tool steel, 6½c to 8c, and still higher prices are asked on special grades. Shafting, 50 per cent off in car lots and 45 per cent in less than car lots, in base territory.

Coke.—Coke has strengthened with the improvement in pig iron, transactions being more numerous and prices steadier. Connellsville producers are holding their output on the basis of $3 ovens, or $5.65 Chicago, and other makers from $4.75 to $5 Chicago. By-product coke is strong at $5.65 Chicago.

Old Material.—Depression is the principal note of the local market. Scrap has not benefited by the improvement in bar iron or scrap, principally because the local trade is amply protected either by large stocks or by contract, and local values continue soft. The "pick-up" trade is fair, but because of the sacrificial prices that are made to close transactions of this kind, the effect is to further depress the market. We quote as follows, gross tons being given in the first paragraph:

Old Steel Rails (4 feet and over)	$15.50 to 16.00
Old Steel Rails (less than 4 feet)	14.00 to 14.50
Old Car Wheels	18.00 to 18.25
Old Iron Rails	20.50 to 21.00
Relaying Rails, subject to inspection	27.00 to 27.50
Heavy Melting Steel	13.00 to 13.50
Mixed Country Steel	11.00 to 11.50

We quote net tons, as follows:

No. 1 R. R. Wrought	$13.25 to 13.50
No. 2 R. R. Wrought	12.25 to 12.50
Shafting	15.75 to 16.00
Dealers' Forge No. 1	11.25 to 11.50
Wrought Pipe and Flues	9.25 to 9.50
No. 1 Cast, 150 pounds and less	13.00 to 13.50
No. 1 Mill	8.25 to 8.50
Mixed Busheling (No. 1 & No. 2)	8.50 to 9.00
Country Sheet	7.25 to 7.50
No. 1 Boilers Cut	9.25 to 9.50
Boiler Punchings	11.00 to 11.50
Iron Car Axles	22.50 to 23.00
Steel Car Axles	17.50 to 18.00
Iron Axle Turnings	9.25 to 9.50
Cast Borings	7.00 to 7.50
Mixed Borings, etc.	7.00 to 7.50
Machine Shop Turnings	9.00 to 9.25
Railroad Malleable	12.50 to 13.00
Agricultural Malleable	12.50 to 13.00
Stove Plate and Light Cast Scrap	10.50 to 11.00
Old Iron Splice Bars	16.00 to 16.50

CLEVELAND.

New Ore Shipping Record Made in June.—Independents Buy Bessemer.

OFFICE OF *The Iron Trade Review*,
BROWNING BUILDING, July 3.

Iron Ore.—While complete returns of the ore movement for June are not yet available, reports have been received from three of the largest shipping ports. The movement from these points during June totals 3,683,203 tons, against 3,248,722 tons during June, 1905. This is a gain of almost 450,000 tons, and figuring the other shipping points as making the same increase the total movement during June would be in the neighborhood of 5,800,000 tons, considerably above what has commonly been expected. This estimate would make the total movement to July 1, 1906, slightly in excess of 11,550,000, against 10,814,050 tons for the corresponding period in 1905. This rate of increase maintained through the season would call for total shipments of about 35,800,000 tons, but as no allowance has been made for the late opening of navigation this year, as compared with an early opening in 1905, and as the ten days' idleness occasioned by the longshoremen's strike has not been taken into consideration, this estimate must be subject to a considerable increase. Nothing has occurred during the week to interfere with the shipment of ore which is testing the capacity of range railroads and docks. Prices continue on the basis of $4.25 Old Range Bessemer.

Pig Iron.—The recent break in prices on southern pig iron has enabled producers in that section to enter the local market, despite high freight rates, and it is estimated that about 15,000 tons have been placed in the Cleveland district within the past fortnight. This business was done on the basis of $13 southern furnace for No. 2 foundry, and bookings were found to be so heavy that an advance to $13.25 has been general. The Bessemer market continues with undiminished strength. The Bessemer association has disposed of about 30,000 tons to independent interests for fourth quarter delivery at $17.25 furnace. For third quarter delivery Bessemer is exceedingly scarce, as was evidenced by the sale last week of 8,500 tons by W. P. Snyder & Co. to independent interests at $17.75 furnace. The foundry iron situation is unchanged, though the market is apparently strengthening and still higher prices may be secured for the comparatively small tonnage which local interests have not yet disposed of. Considerable coke has been contracted for during the week, furnace coke at $3.50 ovens, and foundry at $3. We quote, Cleveland delivery, as follows:

Bessemer	$18.10 to 18.35
No. 1 Foundry	17.25 to 17.75
No. 2 Foundry	17.00 to 17.50
No. 3 Foundry	16.50 to 16.75
No. 2 Southern	17.35 to 17.60
Gray Forge	16.35 to 16.85
Gray Forge Southern	15.85 to 16.35
Lake Superior charcoal	19.50 to 20.00

Finished Materials.—Considerable new business in both universal and tank plates is reported, certain interests being able to take on small tonnages for quick delivery. The light rail market is brisk, in spite of the recent advance, and deliveries are further delayed. In structural materials new contracts are scarce and efforts are now being put forth to influence buyers to take the tonnage remaining on contracts expiring with June. In bars prices are unchanged, and in other lines the situation is practically the same.

Old Materials.—The market continues at a standstill with prices on the same level and with no immediate prospect of advance. It is understood that the booking of the Carnegie Steel Co.

for heavy melting stock was about 10,000 tons. We quote f. o. b. Cleveland, as follows:

Old iron rails	$20.00 to 21.00
Old steel rails (over 6 feet)	16.50 to 17.00
Old steel rails (under 6 feet)	16.00 to 16.50
Old car wheels	16.50 to 16.75
Steel boiler plate	12.00 to 13.00
Steel axles	19.00 to 20.00
Malleable iron (railroad)	15.00 to 15.50
Malleable iron (agricultural)	13.00 to 13.50
Heavy steel	15.00 to 15.50
Country mixed steel	13.00 to 13.50
No. 1 R. R. wrought	15.50 to 16.00
No. 1 busheling	12.00 to 12.50
No. 1 machine cast	13.50 to 14.00
Iron axles	22.00 to 23.00
Axle turnings	10.50 to 11.00
Wrought turnings (free from cast)	9.00 to 9.50
Grate bars	10.00 to 10.50
Pipes and flues	11.50 to 12.00
Tank iron	10.50 to 11.00
Hoop and band iron	7.50 to 8.00
Sheet iron	6.50 to 7.00
Wrought drillings	9.00 to 9.50
Stove plate	10.00 to 10.50
Cast borings	7.00 to 7.50

NEW YORK.

Pig Iron Market Firmer—Heavy Business in Rails and Structural Steel Pending.

OFFICE OF *The Iron Trade Review*, ROOM 1315, No. 150 NASSAU ST., July 3

Pig Iron.—The market has apparently fully recovered from the flurry occasioned by the sudden reduction in price of southern foundry grades ten days ago. Buying has been more general although the volume is not as yet large. Melters are evidently not yet prepared to arrange for their requirements during the remainder of the year, but are providing only for the immediate future. There have been few contracts for 1,000 tons and over, most of the quantities taken being in lots ranging from 100 tons to 250 tons. One sale of 4,000 tons appears to be the record in the local market. There was another of 3,000 tons, several of 1,000 tons and a number of 500 tons.

The revived activity in buying and especially the volume of inquiry has restored the confidence of the furnace men and prices are beginning to show an increased firmness. In the New England district there is still some irregularity, but in general a hardening is plainly noticeable. Lower grade foundry and gray forge are still easy. Steel irons are very firm here as elsewhere, full prices being readily obtained for both Bessemer and basic.

Local sales for the last three days of the week aggregate between 15,000 and 20,000 tons. There was a purchase of 500 tons of Alabama No. 2 and another of an equal amount of Tennessee. One sale of Virginia equaled 1,000 tons. The remaining tonnage was broken up into small lots averaging less than 200 tons each. There have been no sales of importance of steel irons although almost any quantity is readily taken when available. Milliken Bros. Inc., has already begun negotiations for a supply of basic for the new open-hearth plant which it is expected will begin operations in November. The requirement will be about 5,000 tons per month. The following are prices at tidewater:

Northern No. 1 Foundry	$18.25 to 19.00
No. 2 Foundry	17.75 to 18.55
No. 2 Plain	17.50 to 18.00
No. 1 Southern Foundry	17.50 to 18.00
No. 2 Southern Foundry	17.00 to 17.50
No. 3 Southern Foundry	16.15 to 17.00
No. 4 Foundry	15.50 to 16.00

Certificates and Warrants. — The market continues extremely dull with prices showing a steady undertone. There is very little interest and no sales were effected. The following are quotations on the New York Produce Exchange:

Standard Foundry Contracts.

	Bid.	Asked.
June	17.00	
July	17.00	17.25
October	16.90	17.00
November	18.85	17.05

Finished Iron and Steel.—The market for finished materials is suffering from a normal between seasons' quiet. In both rails and structural materials the very large orders for the season have been provided for and it is too early to place contracts for the season which is to follow. In the meantime the mills are busy filling the orders on hand and it will be some months before the managers will be clamoring for more. In the plate and bar mills conditions are essentially different. Plate makers can now offer prompt shipment and among the bar manufacturers competition for orders is keen. A number of contracts for structural steel are pending, but they are mostly small individually. The requirement for the New York Central railroad is probably the largest single contract at present in a condition to result in business shortly. It involves about 25,000 tons of steel to be used in completing the improvements in this city undertaken some years ago. The Brooklyn Rapid Transit Co. is in the market for some 1,200 tons for a new power house. There is also an inquiry for steel to be used in building a new ferry house for the New York Central at 42nd street. Sales of rails will be given elsewhere in the present issue. An order for another 200 tons of plates to be used in repairing the hull of the Plymouth has been placed with representatives of an eastern mill and other ship yards in this locality have taken about 2,000 tons of ship plates. Bar iron is easier in tone. There were only moderate sales and slightly lower prices have been accepted.

The following are prices at tidewater: Angles, 3 to 6 inches x ¼ inch and heavier, 1.84½c; beams, 3 to 15 inches, 1.84½c; tees, 3 x ¼ inch and heavier, 1.89½c; plates, carloads, tank, 1.74½c; flange, 1.84½c; marine boiler, 2.41½c; refined iron bars, 1.54½c to 1.64½c; soft steel bars, 1.64½c; sheets, No. 28 black, 2.50c.

Old Materials.—The market has been very weak with only a very moderate demand and prices barely maintained. All lines of scrap seem to be equally dull. No sales of importance have come to light at the present writing. The following are prices approximately f. o. b. tidewater:

Old iron rails	$21.00 to 22.00
Old steel rails, long lengths	15.00 to 15.50
Old steel rails, short pieces	14.50 to 14.75
Relaying rails	24.00 to 25.00
Old car wheels	17.00 to 18.00
Old iron car axles	26.00 to 27.00
Old steel car axles	19.00 to 19.50
Heavy melting steel scrap	14.00 to 14.50
No. 1 railroad wrought scrap	17.50 to 18.50
Iron track scrap	16.50 to 17.00
Wrought pipe	12.50 to 13.50
Cast borings	9.50 to 10.00
Wrought turnings	13.00 to 13.50

PHILADELPHIA.

American Bridge Co. Buys Basic. — Heavy Orders for Foundry Grades.

July 3.

Pig Iron.—Basic has again been a feature of strength in the local market, the American Bridge Co. having bought 12,000 tons for its Pencoyd plant. The prices of this range from $17.60 to $17.85. The purchase will leave little basic free in this market for some time. Orders received during the past week have been mostly for foundry irons for the third quarter, and while the amounts have generally been small, the aggregate is large and satisfactory to the furnace men. Inquiries have also been numerous and in some cases cover the entire year beginning July 1. While the general report is that the market is quiet, it is worth nothing, as an index of the big business that is being done without any excitement, that one large firm, in settling its accounts for the half year, found that its sales of pig iron during the second quarter of 1906 were 140 per cent greater than that of the corresponding period of 1905. Under such circumstances, notwithstanding the doubt that envelopes the last quarter, prices rule steady and show little change from last week. They may be quoted as follows:

No 1X Foundry	$19.00 to 19.25
No. 2X Foundry	18.50 to 18.75
No. 2 Plain	17.75 to 18.00
Standard Gray Forge	16.25 to 16.50
Basic	17.60 to 17.85
Low Phosphorus	24.50 to 25.00

Finished Material.—There is no especial change to be noted. Orders continue to reach the mills in a steady volume and, but for the recent heavy increase in productive capacity, would soon overwhelm them, especially those making structural material and plates. Bar iron continues rather weak. Prices remain unchanged as follows: Beams, channels and

angles according to specifications, 1.83½c to 2c; refined iron bars, 1.63½c to 1.73½c; steel bars, 1.63½c to 1.73½c; plates, 1.73½c to 1.83½c.

Old Material.—The usual July closings of the mills, railroad embargoes and an almost entire lack of demand have combined to push prices in several lines a little farther down. As the mills are reported to have large stocks of scrap on hand, the outlook for the immediate future cannot be called bright. The following may be quoted as prevailing prices:

Old steel rails	$16.00 to 16.50
No. 1 steel scrap	15.75 to 16.00
Old steel axles	18.50 to 19.00
Old iron axles	24.50 to 25.00
Old iron rails	19.50 to 20.00
Old car wheels	16.00 to 16.50
Choice scrap, R. R. No. 1 wrought	17.25 to 17.75
No. 1 yard scrap	15.75 to 16.25
Machinery scrap	15.50 to 16.00
Low phosphorus scrap	19.00 to 20.00
Wrought iron pipe	12.50 to 13.00
No. 1 forge fire scrap	13.00 to 13.50
No. 2 forge fire scrap, ordinary	9.50 to 10.00
Wrought turnings	11.00 to 11.50
Axle turnings, heavy	12.25 to 12.75
Cast borings	9.00 to 9.50
Stove plates	11.00 to 11.50

ST. LOUIS.

Structural Strikes Ended by Compromise.—Heavy Sales of Southern Iron.

July 3.

The bridge and structural steel workers returned to work Monday morning, having decided Sunday afternoon to accept the compromise offered by the structural and steel association, a daily wage of $4.80. The union workers demanded 62½ cents an hour, but voted to go back to work at 60 cents an hour. Previous to the strike they were receiving 55 cents an hour. The strike had been on since June 1 and construction on several large buildings had come to an absolute standstill, about 12,000 tons of steel being tied up. Structural work was resumed on the big Brown Shoe Co. building and all others throughout the city with the exception of the Blackstone building where the situation was complicated. Had it not been for the strike of the building trades council the structural workers probably would have accepted the compromise much sooner. With the end of the building trades council strike last Thursday, the way was open to the structural workers to settle their difficulties and they took almost immediate action.

The action of the steel workers' union practically ends the strikes of the building trades, though the carpenters and stone masons are still out. However, these two latter unions have practically reached a solution of their troubles and the construction boom in St. Louis, which has been so seriously handicapped, promises to receive new impetus and to go through the summer and fall without interruption.

Pig Iron.—With the decline of the southern iron market to a bed rock level local jobbers went into the breach and took large quantities of the metal. Sales aggregating 5,000 tons of No. 2 southern were reported Saturday at $12.75. Of this amount 3,000 tons was taken by melters in Belleville and 2,000 tons on this side. The ready response of St. Louis jobbers, who appreciated their chance in the weakened condition of the market, readily restored prices which had suffered so from the disintegration of the southern combination and iron was quoted at $13.50 Monday morning, with the market firmer than for several weeks. Heavy purchases were made at $13.00 on Saturday and there was some taking of the metal at $13.50 Monday. Iron men who went into the market heavily on the falling prices express the belief that a firmer tone will now prevail, though a forecast of developments in this market is impossible. Quoting, with the added freight charge of $3.50, the market stands as follows:

Southern No. 1	$17.50 to 18.00
Southern No. 2	17.00 to 17.50
Southern No. 3	16.50 to 17.00
Southern No. 4	16.25 to 16.75
Gray Forge	16.00 to 16.50

Finished Materials.—Demands for structural materials are not great at present, though a greater activity is expected within the next two weeks from the letting of two contracts for large buildings. Several mills have contracts on hand which will tax their capacity and the situation is reported to be most satisfactory on every hand.

CINCINNATI.

Heavy Sales Made.—Some Low Prices, But Market is Stronger.

July 3.

Pig Iron.—During the past week nearly all of the sales agencies in this city have done a satisfactory volume of business. Most of the time southern pig iron was readily obtainable at $13.00 Birmingham and this included standard Birmingham brands as well as Tennessee and north Alabama product. Northern iron sold at $16.00 furnace quite generally. At the close of the week or beginning with Monday a number of the southern furnaces withdrew the $13.00 basis and instructed their agents to hold for $13.50. In southern Ohio there is said to be an understanding between some of the producers to mark up prices to $16.50 f. o. b. furnace. So far as the southern iron market is concerned, the $13.00 price has not entirely disappeared and can still be done with $13.25 readily obtained and $13.50 is an asking price by no means established. The tendency of prices, however, is upward and the market is undoubtedly stronger. Some southern furnaces are now well supplied with orders for the next three months and this is quite universal with the southern Ohio producers.

The buying of the past two weeks has been quite heavy, but indications are that a large number of melters have not covered their wants for the second half of the year and from the number of inquiries under consideration the demand does not seem to be slackening.

Virginia basic for prompt shipment is rather scarce and there is but little to be had for delivery before September 1, which is quoted at $16.00 Virginia furnace. Valley basic is quotable at $17.25 furnace. Gray forge is quiet with quotations ranging from $11.50 to $12.00 Birmingham. Cast iron pipe makers are reported to have purchased a large tonnage during the week, but no important tonnage has been sold to this interest through this market.

During the early part of the week some sales were reported to have been made as low as $12.75 Birmingham, but anything below $13.00 was exceptional. It is believed that the past two weeks' business has convinced southern producers that a $13.00 price was obtainable without difficulty and the liberal tonnage they were able to book on this basis stimulated their views and brought about the advancing tendency above noted. We quote f. o. b. Cincinnati:

Southern Foundry No. 1	$16.50 to 17.00
Southern Foundry No. 2	16.00 to 16.50
Southern Foundry No. 3	15.50 to 16.00
Southern Foundry No. 4	15.00 to 15.50
Southern Foundry No. 1, soft	16.50 to 17.00
Southern Foundry No. 2, soft	16.00 to 16.50
Gray Forge	14.50 to 15.00
Northern Foundry No. 1	18.15
Northern Foundry No. 2	17.65
Northern Foundry No. 3	17.15
Jackson County Silvery, 8 per cent	21.15 to 21.65
Southern Charcoal	24.00 to 25.00

Finished Material.—The situation shows but little change and prices are well maintained. Bar iron is quiet and the Pittsburg basis still obtains. Structural shapes and plates are somewhat less active, but near deliveries still command premiums.

We quote: bars at 1.63c, half extras, with dealers quoting 1.85c for iron and steel out of store. Galvanized sheets, No. 10 and No. 12, in car lots are 2.68c. We quote black sheets, No. 27 at 2.40c in car lots of 500 bundles. Black sheets out of store are selling as follows: No. 28, 2.85c; No. 27, 2.75c; No. 16, 2.35c; No. 14, 2.25c; No. 12, 2.15c. Tank plates are firm and sell out of store at 2c to 2.10c for ¼-inch and 2.10c for 3-16, Nos. 8 and 10. Beams and channels are quoted at 2.25c to 2.35c from stock and angles at 2.10c to 2.15c for base sizes.

In merchant pipe the demand is good with prices well maintained. Independent mills are said to be following the schedule of the leading interests. We quote f. o. b. Cincinnati.

Wise County, Va. Furnace Coke prompt shipment	$2.50 per ton
Wise County, Va. Foundry Coke on contracts	$2.65 to 2.75 per ton
Pocahontas Furnace Coke prompt shipment	$2.25 to 2.50 per ton
Pocahontas Foundry Coke on contracts	2.65 to 2.75 per ton
Connellsville Furnace Coke prompt shipment	2.50 per ton
Connellsville Foundry Coke on contracts	2.65 to 3.00 per ton
New River Foundry Coke on contracts	2.65 to 2.75 per ton
New River Furnace Coke, prompt shipment	2.50 per ton

†Wise County, Va., Coke on Furnace contracts is sold mainly on a sliding scale basis for pig iron prices on the following basis: $1.65 per ton on $9.00 pig iron, plus 17 per cent of the advance on pig iron above $9.00 Birmingham

Coke.—The market is assuming a firmer tone and there is a tendency in some districts to advance prices for foundry coke. Some contracting is being done and quite a number of consumers have already placed their orders for their requirements over the second half of the year. Prices in the leading coke producing districts are as follows:

MERCHANT PIPE.
(Basing Discounts)

	Steel Pipe		Guaranteed Wrought Iron Pipe	
	Black Per cent	Galv. Per cent	Black Per cent	Galv. Per cent
⅛ and ¼ inches	69.7	53.7	....	....
⅜ inch	73.5	61.3	....	....
½ inch	73.7	61.7	....	....
¾ to 6 inches	77.7	67.7	....	....
7 to 12 inches	72.7	57.7	....	....

Old Material.—The market continues quiet and unsatisfactory to dealers who are unwilling to follow the recent decline in pig iron and find it difficult to do business with melters except at liberal concessions. Prices, however, are not quotably changed, although the market is dull and easy. We quote f. o. b. Cincinnati.

Old No.1 railroad wrought, net tons	$14.00 to 14.50
Cast machine and foundry, net tons	12.50 to 13.00
Old iron rails, gross tons	20.00 to 20.50
Old steel rails, gross tons	15.50 to 16.00
Old short lengths, gross tons	16.00 to 17.00
Old iron axles, net tons	22.00 to 23.00
Heavy melting scrap, gross ton	15.00 to 15.50
Stove plate, net tons	10.00 to 10.50
Wrought turnings, net tons	9.00 to 9.50
Cast borings, net tons	7.00 to 7.50
Car wheels, net tons	16.00 to 16.50

Metal Market

CHICAGO.

July 3.

Nearly all metals have declined in value. Copper has suffered by the large domestic production, the figures of which were recently published, by heavy importations and the decline of the London market. Lake is now quoted for spot delivery at 18½c; electrolytic, 18¾c, and casting 18¼c; later shipments are ¼ of a cent lower. Pig tin has declined 5 to 10 points, being quoted all the way from 39c to 42c, for car lots, and 1c to 1½c higher for less than carload lots. Spelter for prompt delivery, is quoted at 6.15c to 6.20c for car lots; lead, desilverized, 6.05c to 6.15c for 50 ton lots; corroding, 6.55c to 6.65c for 50-ton lots; Cookson's antimony, 26c; other grades 24c to 25c; sheet zinc, $7.75 list f. o. b. La Salle, in car lots of 60-lb. casks; nickel, 40 to 47c for round lots, and 50c to 60c for smaller quantities.

Little change is noted in the old metal market, which continues of an inactive nature. We quote dealers' buying prices as follows:

Copper wire, 16¼c; heavy copper, 16c; copper bottom, 15c; copper clips, 15½c; red brass, 15¼c; yellow brass, heavy, 12c; yellow brass borings, 10c; red brass borings, 13½c; light brass, 8½c; pipe lead, 5½c; zinc, 4½c; tin foil, 31c; tea lead, 4½c; pewter, 23c.

ST. LOUIS.

July 3.

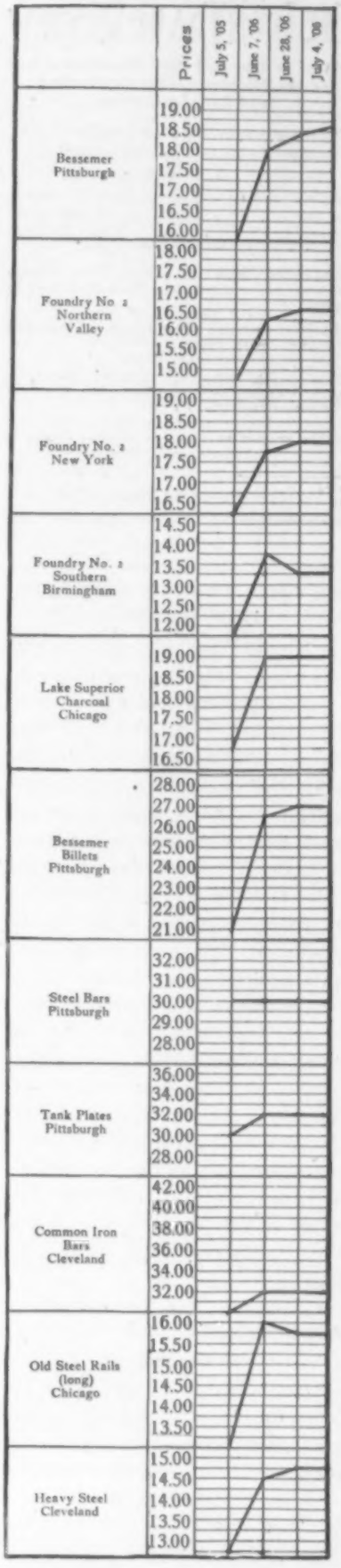
Lead ore sold on the Joplin market at $78 per ton, while the pig product was quoted on the St. Louis market at $5.80 for Missouri brands. In the spelter market there was little activity and at the week's end no sales were reported. Previous quotations were around $6. In the Joplin market the ore is quoted at $43 to $46 per ton of 60 per cent basis.

Large Railway Expenditures:—Directors of the Pennsylvania Railroad Co. have approved a supplemental construction and equipment list for an expenditure of about $20,000,000. This is in addition to that of $42,000,000 set aside to pay for 33,000 freight cars and 313 locomotives now in process of delivery, for which the French loan was effected. Most of the appropriation, however, will be used for the purchase of freight cars and locomotives and only a comparatively small amount will go into new construction work. It is reported that 15,000 freight cars of 50 tons capacity and 300 additional locomotives will be ordered.

Two Vessels Launched.—Two large ore freighters were launched Saturday. At the Ecorse yards of the Great Lakes Engineering Works, Detroit, the steamer Ishpeming, building for the Cleveland-Cliffs Iron Co., took the water. This is the second of three 10,000-ton freighters being built during the present summer for this company. The J. H. Sheadle will be launched later in the season. At Lorain, O., the steamer J. Q. Riddle was launched. She is building for the Milwaukee Steamship Co., of which Arthur H. Hawgood, of Cleveland, is manager.

The American Ship Building Co. has closed a contract with the Buffalo & Susquehanna Steamship Co. for a 10,000-ton ore freighter for 1907 delivery, the twelfth large order placed on the ship building company's books for next year.

PRICE CHART.



THE IRON TRADE REVIEW

Devoted to Iron and Steel Manufacture and to the Machinery, Metal-Working and Foundry Trades.

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THE IRON TRADE'S RECUPERATIVE POWERS.

A fortnight ago editorial reference was made in these columns to the latent strength of the steel market, it being remarked that there had been several recent instances in which the market had recovered from influences which at first blush appeared to presage a general decline. Those words had been written without knowledge of the break in southern iron which was recorded in the market reports contained in the same issue in which they appeared, and were not revised when that news was received. Developments since have added other instances of the market's recuperative powers. Immediately following the break in southern iron, some buyers expected a further decline, but instead the southern iron market has become firmer, and it develops that the position as to both stocks and production favors an advance rather than a decline.

In another direction remarkable strength has developed. In some quarters there is a tendency to regard most of the pig iron purchases of the United States Steel Corporation in the central west as undertaken partly for the purpose of supporting the market. If one admit for the sake of the argument, that such is the case, then the market in steel making pig in the central west is shown to be very strong, inasmuch as the steel corporation, having bought last January for second quarter, and having made additional purchases for April and for May, took but a negligible quantity for June and has made no purchase at all for July or for third quarter; yet just at this time the Bessemer pig iron market shows an advance of 50 cents a ton from a price which was held with scarcely any variation for six months. If, on the other hand, it is held that the corporation never buys to support the market, its requirements are not shown to have materially decreased, since it has bought a large tonnage of scrap for July which does it as well as pig iron, and it is very seldom indeed that it purchases scrap.

When the decline in foundry pig iron in the north assumed definite form recently, there were predictions that this grade would necessarily carry Bessemer and basic with it. As time progressed it appeared that this was far from axiomatic and three weeks ago it was claimed in these columns that for the immediate future at least a definite and large spread was being established between Bessemer and foundry grades in the central west, which theretofore had been in close company. Last week a consumer in the immediate Pittsburg district bought three equal sized lots of pig iron for third quarter delivery, No. 2 foundry, No. 3 foundry and standard Bessemer, and paid for the Bessemer just $1.75 more, delivered, than for the No. 2 foundry, and $2.25 more than for the No. 3 foundry. Bessemer pig iron has clearly established its ability to make an independent market, and if there is any movement towards closing the present gap it will be by an advance in foundry pig, which movement indeed may have already started.

All these developments tend in the one direction, to show that the iron and steel market has a latent strength and an almost unsuspected recuperative power.

ARTICLES ON COST KEEPING.

The question of cost keeping is always one of great importance in any manufacturing plant. For this reason THE IRON TRADE REVIEW has arranged with Mr. F. E. Webner, of Cincinnati, to write a series of twelve articles on cost keeping. These articles will be as follows:

1 A Tool for Cutting Down Costs.
2 Material: Purchase Department.
3 Material: Receiving and Recording.
4 Material: Issuances.
5 Labor: Time Systems, Pay Rolls.
6 Labor: Individual Shop Orders and Groups of Orders.
7 Labor: Premium Systems.
8 Expense: Manufacturing and Commercial.
9 Expense: Departmental Distribution.
10 Expense: The Man-Hour Distribution.
11 What Constitutes Cost of Production.
12 Perfection in Cost Finding.

Mr. Webner's long and varied experience in matters of business system thoroughly qualifies him to write articles which cannot fail to be of value, and we trust that all interested in cost keeping will peruse them carefully.

RECORD IRON AND STEEL EXPORTS.

Exports of iron and steel from the United States in the fiscal year just closed will exceed all previous records probably by nearly if not quite a quarter million tons. The official statistics for May have just become available, and estimating the June exports at about the same figure, the total comes to about 1,350,000 gross tons. This is compared with the records of previous years in the following table. The totals do not include iron ore, but include scrap, pig iron, crude steel and rolled iron and steel products, structural material, whether fabricated or not, wire, cut and wire nails, tacks, etc., and, since July 1, 1905, pipes and fittings.

Iron and Steel Exports.

Fiscal year ended June 30,	Gross tons.
1906	1,350,000*
1905	1,123,579
1904	675,521
1903	302,492
1902	495,661

*Estimated.

The estimate for 1906, based upon June but slightly exceeding the known record for May, shows an increase over the previous fiscal year of 226,421 gross tons. A relatively small part of this increase is not real, because pipes and fittings were not included in the

1905 figures, but will probably amount to about 155,000 tons in the fiscal year 1906. The government started to return weights, in addition to values, for this line, on July 1, 1905, and did so because there had just been a large increase. It is quite certain, therefore, that the exports of pipes and fittings in 1905 were very much less than the 155,000 tons which will be shown for 1906.

Five other lines, pig iron, crude steel, steel plates, structural material and wire, will show an increase of about 125,000 tons, which with pipes and fittings would make a total increase of 280,000 tons, but steel rails will show a decrease of about 52,000 tons, making the net increase in the lines thus far mentioned 228,000 tons. In the various minor lines, scrap, iron and steel bars, nails and tacks, etc., there will be slight variations in either direction.

The above comparisons are all for the full fiscal year, it being necessary to estimate June. Getting down to the figures actually returned for the 11 months ended May 31, 1906, and comparing them in the most interesting lines with the figures for the similar 11 months a year previous, the following comparison can be made:

Iron and Steel Exports, Gross Tons:

	11 months ended May 31,		
	1905.	1906.	Change.
Pig iron	45,581	52,834	+ 7,253
Crude steel*	226,452	255,991	+29,539
Steel rails	387,089	319,830	−67,259
Steel plates	62,112	71,558	+ 9,446
Structural	68,290	85,949	+17,659
Wire	113,670	148,737	+35,067

*Ingots, blooms, billets, sheet bars, etc.

As noted above, the estimated exports of pig iron, crude steel, steel plates, structural material and wire for the fiscal year will probably exceed those for the previous fiscal year by some 125,000 tons. The increase in the 11-month period is only about 100,000 tons, and the extra 25,000 tons is to be made up in June as judging by the May exports the June figures will be very large. Furthermore, while rails show a drop in 11 months of 67,259 tons, the drop for the whole year will likely be about 52,000 tons, June showing large exports. May was a very good month, as some of the lines enumerated in the table far outran their averages for the previous ten months, and others held their own, as shown in the following table:

Iron and Steel Exports, Gross Tons.

	May, 1906.	Monthly average through previous 10 months.
Pig iron	5,422	4,741
Crude steel	23,053	23,294
Steel rails	37,789	28,204
Steel plates	9,291	6,227
Structural	7,266	7,868
Wire	18,305	13,043

The general conditions of trade throughout the world point very clearly to a continuance of the increase in iron and steel exports by the United States, not simply of the general increase shown by the full fiscal year just ended, but of the additional increase which began in May or thereabouts. The outlook for domestic consumption is perhaps no greater than it was a year ago, while the productive capacity is considerably larger, and American manufacturers have demonstrated their ability to sell their surplus in the markets of the world at profitable prices, and in competition with the other iron exporting countries. Great Britain and Germany have both largely increased their iron and steel exports this year. They have also increased their imports. England, in particular, is drawing semi-finished material, particularly billets and sheet bars, from both the United States and Germany, and there is undoubtedly room for this country to expand its exports by as much as it may desire. With about 1,350,000 tons of iron and steel exported in the fiscal year just closed, the exports for the new fiscal year will in all probability exceed the million and a half mark. England in the first five months of this year exported at the rate of more than three million tons per year, with less than half our own production.

Big Foreign Contract.—The export department of the Westinghouse companies has secured the contract for machinery and other equipment for the building of an immense water power plant near Rio de Janeiro, Brazil, to have a capacity of 40,000 horsepower. The plant will supply the city with light and power for its traction lines as well as power for commercial purposes. Most of the machinery will be built in Pittsburg. The contract was secured after brisk bidding with European companies.

IN THE LABOR FIELD.

Judge O. T. Williams, of Milwaukee, has handed down decisions in injunctions obtained by the Bucyrus Steam Shovel & Dredge Co. against striking molders, holding that the men have the right to picket if they do it in a peaceful manner, that they cannot be enjoined from using persuasion to induce other workmen either to join the union or to leave the employment of firms whose men are on strike. In the examination under the discovery statute in the case of the Vilter Mfg. Co. against the molders, the judge limits the examination to alleged threats, intimidation and violence. The men are not to be examined as to alleged attempts to pursuade other employes from leaving their positions.

The city council, of Milwaukee, which recently adopted resolutions of a decidedly socialistic nature in connection with the molders' strike in that city, has been in receipt of a number of communications from representative firms in that city protesting strongly against such uncalled for action on the part of city authorities and stating in connection with the council's request for an early settlement that they feel entirely capable of managing their own business. One firm states: "When we need advice we certainly will not ask your honorable body for it. We consider the affair a piece of impudence entirely uncalled for and the assumption on your part is a breach of good judgment." Other communications are in a similar vein.

The Foundrymen's Association at Rockford, Ill., recently came out with a strong statement declaring for the open shop. This was signed by the following firms: Avon Street Foundry, B. F. Barnes Co., W. F. & John Barnes Co., Dobson Mfg. Co., Emerson Mfg. Co., Illinois Sewing Machine Co., M. A. Love Mfg. Co., Rockford Brass Works, Rockford Malleable Iron Works.

New Locomotive Plant.—The H. K. Porter Co., of Pittsburg, has secured the deed to its recently acquired property at Economy, Pa., and will at once begin the work of erecting one of the largest locomotive plants in the world, moving from the present site at Lawrenceville, as soon as the new plant is ready to receive it. The new site is on the Fort Wayne division of the Pennsylvania railroad near the Ambridge plant of the American Bridge Co.

A. E. Borie, who recently resigned the vice presidency of the Bethlehem Steel Co., has taken an official position with the New Jersey Zinc Co.

Marvelous Increase of Iron and Steel Production.

The annual statistical report of the American Iron and Steel Association is about to be distributed. Advance proofs show that the high standard of previous years has been maintained and some new features, especially as to rolled products, have been added. Much of the information has been published heretofore by the *Bulletin* and THE IRON TRADE REVIEW. The general review of the American iron trade in 1905 is as follows:

"The year 1905 was not only the most productive and most prosperous year in the history of the American iron trade but it was also the most uniformly prosperous year. From January to December the demand for all leading forms of iron and steel and for the raw materials of their manufacture was continuous and persistent. There was no 'dull season,' no overloading of the markets, no slump in prices. Upon the other hand there was no great scarcity of iron and steel at any time, the markets in the main were well supplied, and there were consequently no 'famine' prices. The orders that were sent abroad entirely lacked sensational features, because we had the capacity to meet our own wants for pig iron and finished iron and steel. Nor was our export trade neglected, as will presently be seen. Production was abnormally and phenomenally great, but best of all prices were kept within reasonable bounds. We have heard of no complaints that prices were too high. There were, of course, fluctuations in prices, as is always the case in years of prosperity or years of adversity, but in 1905 such decline in prices as took place was caused mainly by the naturally lessened activity of the summer months. This decline affected only a few products.

"The increase in the production of iron and steel in 1905 as compared with 1904 was simply marvelous. Pig iron jumped from 16,497,033 tons in 1904 to 22,992,380 tons in 1905; Bessemer steel from 7,859,140 tons in 1904 to 10,941,375 tons in 1905; open-hearth steel from 5,908,166 tons in 1904 to 8,971,376 tons in 1905; and all kinds of rails from 2,284,711 tons in 1904 to 3,375,929 tons in 1905. The total production of steel in 1904 was 13,859,887 tons, but in 1905 it was 20,023,947 tons. The shipments of iron ore from the Lake Superior region increased from 21,822,839 tons in 1904 to 34,353,456 tons in 1905. Our production of pig iron in 1905 exceeded the whole world's production as late as 1887, nineteen years ago. It is freely predicted that even the above extraordinary figures of production in 1905 will be exceeded in 1906. The present outlook certainly justifies this opinion. An unusually mild winter greatly facilitated building and other operations which call for iron and steel in large quantities, thus giving the iron trade a good start in 1906. Thus far there is not apparent any noticeable diminution in the extraordinary demand for iron and steel that has existed for many years. The country is steadily increasing its capacity to meet any possible demand that may exist for either pig iron or manufactured iron and steel.

"The prices of iron and steel which prevailed in 1905 were not only kept within reasonable bounds, as above stated, but the advances that occurred over the exceedingly low prices of 1904 were really smaller than the extraordinary demand would have justified, while the forbearance of the steel rail manufacturers in keeping the price of rails all through 1905 at the same

TABLE A.

SUMMARY OF STATISTICS FOR 1904 AND 1905.

Subjects—Calendar years.	1904.	1905.
Production of Iron Ore, gross tons	27,644,330	.....
Imports of Iron Ore, gross tons	487,613	845,651
Production of Bituminous Coal, gross tons	240,244,391	.....
Production of Pennsylvania Anthracite, gross tons	65,318,490	69,339,152
Production of all kinds of Coal, gross tons	314,562,881	.....
Shipments of Pennsylvania Anthracite, gross tons	57,492,522	61,410,201
Imports of Coal for Consumption, gross tons	1,623,280	1,645,244
Domestic Exports of Coal, gross tons	8,573,518	9,189,248
Production of Coke, net tons	23,621,520	.....
Production of Pig Iron, gross tons	16,497,033	22,992,380
Production of Spiegeleisen, Ferro-mang., Ferro-phos., and Ferro-Bess., included in Pig Iron, gross tons	220,392	293,976
Production of Bessemer Steel, gross tons	7,859,140	10,941,375
Production of Open-Hearth Steel, gross tons	5,908,166	8,971,376
Production of Crucible Steel, gross tons	83,391	102,233
Production of Blister and Patented Steel, gross tons	9,190	8,963
Production of all kinds of Steel, gross tons	13,859,887	20,023,947
Production of Open-Hearth Steel Castings, gross tons	302,834	526,540
Production of all kinds of Steel Castings, gross tons	330,211	560,767
Production of Bessemer Steel Rails, gross tons	2,137,957	3,192,347
Production of Open-Hearth Steel Rails, gross tons	145,883	183,264
Production of Iron Rails, gross tons	871	318
Production of all kinds of Rails, gross tons	2,284,711	3,375,929
Production of Structural Shapes, gross tons	949,146	1,660,519
Production of Iron and Steel Wire Rods, gross tons	1,699,028	1,808,688
Production of Plate and Sheet Iron and Steel, except Nail Plate, gross tons	2,421,398	3,532,230
Production of Bar, Bolt, Hoop, Skelp, Rolled Axles, Rolled Armor Plate, etc., gross tons	4,597,497	6,398,107
Production of all Rolled Iron and Steel, including Nail Plate and excluding Rails, gross tons	9,728,670	13,464,086
Production of all Rolled Iron and Steel, including both Nail Plate and Rails, gross tons	12,013,381	16,840,015
Production of Iron and Steel Cut Nails and Cut Spikes, kegs of 100 pounds	1,283,362	1,357,549
Production of Iron and Steel Wire Nails, kegs of 100 pounds	11,926,661	10,854,892
Production of Tinplates and Terne Plates, gross tons	458,208	493,500
Production of Ore, Pig, and Scrap Blooms, Slabs, Billets, and Bars for Sale, gross tons	5,743	12,750
Imports of Iron and Steel, foreign value	$21,621,970	$26,392,728
Exports of Iron and Steel, home value	$128,553,613	$142,928,513
Miles of New Railroad built (estimated for 1905)	5,003	5,000
Tonnage of Steel Vessels built in the calendar year	160,809	248,710
Immigrants landed in the year ended December 31	808,257	1,055,834

figure that prevailed all through 1904 is worthy of special mention.

"The extraordinary demand for iron and steel in 1905 was primarily due to the continued prosperity of the country, notwithstanding the reaction in the stock market in 1903 and 1904, which unfavorably affected all business. The reaction having spent its force in the summer of 1904 the pendulum swung in the opposite direction in the last quarter of that year and in 1905. With re-established confidence in the business world, good crops, an abundance of good money, continued tariff protection against foreign competition, a large increase in our population, and the steadily increasing use of iron and steel for engineering purposes and in the construction of buildings and railways cars, the great demand for iron and steel in 1905 was naturally to be expected, and it was encouraged and promoted by the good sense of the manufacturers in keeping down prices.

"As in other years the railroads were the best customers of our iron and steel manufacturers in 1905. Their increased prosperity in that year, in harmony with that of the country generally, called for larger expenditures for rails, cars, locomotives, bridges, etc., than in 1904. There was in 1905 little if any increase in the mileage of new railroad track built but a very great increase in the betterment and duplication of track already built, and in the same year more cars and locomotives were built in this country than in any former year. The Baldwin Locomotive Works built 2,250 locomotives in 1905, but in 1904 they built only 1,453. Thus far in 1906 there has been no abatement in the demand for railway equipment of any kind.

"One of the notable features of the iron trade of this country in 1905 was the great increase that took place in that year in our exports of iron and steel, notwithstanding the active home demand for these products. In 1904, when this demand was far from being satisfactory to our manufacturers, when prices were low and customers whether at home or abroad, were badly wanted and diligently sought for, we exported iron and steel products valued at $128,553,613, exceeding the exports of any year since 1900, but in 1905 we exported iron and steel products valued at $142,928,513, an increase over 1904 of $14,374,900. Much of this increase was due to the systematic activity of the United States Steel Corporation in pushing its wares into foreign markets. In 1905 it exported 953,858 gross tons of iron and steel in many forms. Our imports of iron and steel in 1905 also showed an increase over 1904, amounting in 1905 to $26,392,728, against $21,621,970 in 1904. All the increase in imports in 1905 over 1904, and probably more than this was caused in part by the expansion of our own iron and steel industries in that year, making necessary an increased importation of spiegeleisen, ferro-manganese, and other so-called raw materials, and in part by large importations of pig iron itself to be exported in finished forms with the benefit of the tariff drawback.

"On April 18 of the present year there occurred the great San Francisco earthquake, followed by a most disastrous fire, the whole entailing a property loss of at least $350,000,000, which loss must be met partly by the insurance companies of the country. To meet this drain upon their resources many of these companies have been compelled to sell railroad and other securities in which their profits had been invested, and this action, of itself, has tended to depress the prices of these securities. Of course, the bears in the stock market also profited by the San Francisco calamity. But from neither cause has the depression in stock prices been very great. Other causes, notably a threatened strike in the anthracite coal regions of Pennsylvania, which has happily been averted, and the prospect of unfriendly railroad legislation at Washington, exercised in April and May a depressing influence on many railroad and industrial stocks. The great producing industries of the country have not been adversely affected

TABLE B. STRUCTURAL SHAPES.

States—Gross tons.	1904.	1905.	States—Gross tons.	1904.	1905.
New York and New Jersey	47,657	125,422	Indiana, Illinois, Wis., Wy., and California	48,038	71,199
Pennsylvania	829,167	1,410,609			
Alabama and Ohio	24,284	53,289	Total	949,146	1,660,519

TABLE C. PLATES AND SHEETS.

States—Gross tons.	1903.	1904.	1905.
New England, New York, and New Jer.	12,560	14,599	76,197
Pennsylvania	1,771,745	1,555,941	2,308,389
Delaware and Maryland	23,703	23,956	28,481
West Virginia	56,361	108,964	93,586
Kentucky and Alabama	40,635	44,845	47,303
Ohio	403,705	490,192	688,633
Indiana, Illinois, Missouri, and Cal.	290,956	182,901	289,641
Total	2,599,665	2,421,398	3,532,230

TABLE D. MISCELLANEOUS ROLLED PRODUCTS.

States. Gross tons.	1904.	1905.	States. Gross tons.	1904.	1905.
Me. and Mass.	31,858	35,301	Ohio	572,604	903,254
R. I. and Coun.	71,498	84,501	Indiana	183,155	276,856
New York	147,561	226,742	Illinois	289,904	507,256
New Jersey	56,714	87,613	Michigan	47,326	89,417
Pennsylvania	2,634,712	3,451,205	Wisconsin	127,536	164,924
Del. and Md.	19,365	12,400	Missouri	50,370	62,740
Virginia	30,502	35,679	Col. and Wy.	29,195	46,085
West Virginia	174,572	229,776	Washington, Oregon, and California	30,908	33,556
Kentucky	26,331	39,391			
Tenn., Ga., and Texas	28,923	35,765			
Alabama	44,463	75,646	Total	4,597,497	6,398,107

TABLE E.

Products—Gross tons.	Iron.	Steel.	Total.
Merchant bars—all kinds and sizes	1,322,439	2,271,162	3,593,601
Skelp and pipe iron or steel	452,797	983,198	1,435,995
Splice bars	17,422	179,900	197,322
Hoops, bands, and cotton-ties	2,863	442,664	445,527
Rolled forging blooms and forging billets	405	41,349	41,754
Spike and chain rods, horseshoe bars, strips, shovel blanks, blanks for seamless tubes, railroad ties, and all other finished rolled (not forged) forms not heretofore enumerated	154,620	529,288	683,908
Total	1,950,546	4,447,561	6,398,107

by the untoward incidents above referred to. This review ends with May.

"There were no strikes or lockouts in the iron trade in 1905 that are worthy of mention, but the present year has produced a few strikes that have annoyed but have not seriuosly handicapped our iron and steel manufacturers. All have been settled."

Production of Structural Shapes.

The statistics of iron and steel structural shapes embrace the production of beams, beam girders, zee bars, tees, channels, angles, and other structural forms, but they do not include plates or girders made from plates. Plates are provided for under other classifications, and in the general statistics of plates are included all plates cut to specifications.

The total production of strictly structural shapes in 1905 was 1,660,519 tons, against 949,146 tons in 1904, an increase of 711,373 tons, or over 74.9 per cent. Of the total production in 1905 about 1,648,889 tons were rolled from steel and about 11,630 tons from iron, against about 941,127 tons from steel and about 8,019 tons from iron in 1904. The production of structural shapes in 1904 and 1905 by states is shown in gross tons in Table B.

Nine states made structural shapes in 1905, against the same number of states in 1904. Wyoming, which made a few tons of iron shapes in 1904, was not a producer in 1905, and Wisconsin, which did not make structural shapes in 1904, was a producer in 1905. Pennsylvania made over 84.9 per cent of the total production in 1905, against over 87.3 per cent in 1904.

Production of Plates and Sheets.

The production of iron and steel plates and sheets in 1905, excluding nail plate, amounted to 3,532,230 tons, against 2,421,398 tons in 1904, an increase of 1,110,832 tons, or nearly 45.9 per cent. Of the total production in 1905 about 3,460,074 tons were rolled from steel and about 72,156 tons from iron, against about 2,353,685 tons from steel and about 67,713 tons from iron in 1904. Steel plates and sheets were not separated from iron plates and sheets in our statistics for 1903. Skelp iron and steel are not included in our statistics of plates and sheets but are classed with miscellaneous rolled products. Table C gives the production by states of all kinds of plates and sheets since 1903.

Fourteen states rolled plates or sheets in 1905, against the same number of states in 1904. Of the total production of plates and sheets in 1905 Pennsylvania made over 65.3 per cent, against over 64.2 per cent in 1904; Ohio nearly 19.5 per cent, against over 20.2 per cent in 1904; Illinois over 5.4 per cent, against over 3.7 per cent in 1904; and West Virginia over 2.6 per cent, against over 4.5 per cent in 1904. Indiana, New York, Kentucky, Maryland, Delaware, Alabama, Massachusetts, Missouri, New Jersey, and California also made plates or sheets in 1905 in the order named. Connecticut, which rolled plates and sheets in 1903, was not a producer in 1904 or 1905.

At the request of the manufacturers the association has separated for 1905 the production of iron and steel plates of No. 12 gauge and thicker from the production of iron and steel sheets of No. 13 gauge and thinner. The total production of plates amounted to 2,041,206 tons, of which 10,022 tons were iron plates and 2,031,184 tons were steel plates. The total production of sheets amounted to 1,491,024 tons, of which 62,134 tons were iron sheets and 1,428,890 tons were steel sheets. Black plates, or sheets, for tinning are included in the figures but nail plate is excluded.

Of the total production of iron and steel plates Pennsylvania made 1,592,512 tons, or over 78 per cent; Ohio, 203,618 tons, or over 9.9 per cent; and Illinois, 149,071 tons, or over 7.3 per cent. Of the total production of iron and steel sheets Pennsylvania made 715,877 tons, or over 48 per cent; Ohio, 485,015 tons, or over 32 per cent; West Virginia, 88,861 tons, or over 5.9 per cent; and Indiana, 84,887 tons, or almost 5.7 per cent.

Production of Black Plates, or Sheets, For Tinning.

The production of black plates, or sheets, for tinning in 1905, which is included in the preceding table, amounted to 507,587 gross tons, against 472,569 tons in 1904, an increase of 35,018 tons, or over 7.4 per cent. Of the production in 1905 Pennsylvania made almost 50.5 per cent, against over 53.4 per cent in 1904. Ohio, West Virginia, Indiana, Illinois, Maryland, and Missouri also made black plates, or sheets, for tinning in 1904 and 1905. Of the total production of black plates, or sheets, in 1905 a little over 3,000 tons were rolled from iron and over 504,000 tons from steel, against a little less than 3,000 tons from iron and over 469,000 tons from steel in 1904.

Production of Tin Plates and Terne Plates.

The association estimates the production of tin plates and terne plates in 1905 as amounting to 493,500 tons, as compared with an estimated production of 458,000 tons in 1904, an increase of 35,500 tons, or over 7.7 per cent. The preliminary statistics of the production of tin plates and terne plates in 1904 were recently made public by the bureau of the census. The tin plate production is given as amounting to 867,526,985 pounds and the terne plate production as amounting to 158,857,866 pounds; total, 1,026,384,851 pounds. The estimate of the production of tin plates and terne plates in 1904, as printed in the annual report in June, 1905, equaled 1,025,920,000 pounds, a difference as compared with the census figures of only 464,851 pounds, or about 208 tons.

Production of Nail Plate.

The production of iron and steel nail plate in 1905 was 64,542 tons, against 61,601 tons in 1904, an increase of 2,941 tons, or over 4.7 per cent. Of the total production in 1905 about 40,483 tons were steel and about 24,059 tons were iron, against about 42,182 tons of steel and about 19,419 tons of iron in 1904. These figures are not included in the production of plates and sheets.

Production of Miscellaneous Rolled Products.

Table D gives the production by states in 1904 and 1905 of merchant bars, skelp, spike rods, bolt rods, splice bars, hoops, bands, cotton ties, strips, rolled axles, rolled armor plate, and other forms of finished rolled iron and steel for which statistics have not been already given. Rolled forging blooms and forging billets are also included for 1905 but not for 1904. Forged armor plate, hammered axles, and other forgings are not included.

Of the above enumerated products about 4,447,561 tons were steel and about 1,950,546 tons were iron in 1905, as compared with 2,934,601 tons of steel and 1,662,896 tons of iron in 1904.

At the request of the manufacturers the association has separately ascertained for 1905 the production of merchant bars, skelp, splice bars, hoops, bands, cotton ties, and other miscellaneous forms of finished rolled iron and steel; also the production of rolled forging blooms and forging billets. See Table E. Iron is separated from steel throughout in the table. Gross tons of 2,240 pounds are used.

Production of all Rolled Iron and Steel by States in 1904 and 1905.

By the phrase rolled iron and steel we include all iron and steel rolled into finished forms. Forged armor plate, hammered axles, and other forgings are not included, nor such intermediate rolled forms as muck bars, slabs, blooms, billets, tin plate and sheet bars, etc. In 1905 the production of rolled forging blooms and forging billets is, however, included.

The production of all kinds of iron and steel in finished forms in the United States in 1905, including forging blooms and forging billets, amounted to 16,840,015 gross tons, against 12,013,381 tons in 1904, an increase of 4,826,634 tons, or over 40.1 per cent. Of the total production in 1905 about 14,780,025 tons were rolled from steel and about 2,059,990 tons from iron, as compared with about 10,253,297 tons rolled from steel and about 1,760,084 tons from iron in 1904.

Twenty-six states rolled iron or steel or both iron and steel in 1905, against 27 states in 1904. Pennsylvania made over 52.9 per cent of the total production in 1905, against over 53.7 per cent in 1904; Ohio over 13.6 per cent in 1905, against over 12.6 per cent in 1904; Illinois over 10.3 per cent in 1905, against the same percentage in 1904; New York over 5.4 per cent in 1905, against over 4 per cent in 1904; and Indiana over 2.9 per cent in 1905, against over 3.4 per cent in 1904. No other state made over 2.2 per cent in 1905 or over 2.5 per cent in 1904. Texas, which had not rolled iron or steel since 1892, again appeared as a producer of both rolled iron and steel in 1905.

CALVIN W. RICE BECOMES A. S. M. E. SECRETARY.

Calvin W. Rice has accepted the appointment of secretary of the American Society of Mechanical Engineers.

CALVIN W. RICE.

He succeeds to the position held for nearly 25 years by Prof. Frederick R. Hutton, who retires because he is unable to give to the society the attention he deems necessary and at the same time carry on his work at Columbia University.

Calvin Winsor Rice was born in Winchester, Mass., on November 4, 1868, and graduated from the Massachusetts Institute of Technology in the class of 1890 with the degree of electrical engineer. During his college vacations, he worked for the Thomson-Houston Electric Co., entering the employ of that company and its successor, the General Electric Co., after graduation. While in the employ of these companies, he worked up to the position of assistant engineer of the power and mining department, and in 1895, he was appointed local manager of the General Electric Co., at Cincinnati.

During 1895 and 1896, Mr. Rice was the electrical superintendent of the Silver Lake mines, Silverton, Colo., and with the Anaconda Copper Mining Co. He later became electrical engineer of the Kings County Electric Light & Power Co., Brooklyn, New York. This was in 1898. Shortly after this, he became electrical engineer of the Consolidated Telegraph & Electric Subway Co., owning and operating the high-tension subways of New York City. He was also chief of the meter and testing department of the New York Edison Co. Since 1903, he has been vice president and sales manager of the Nernst Lamp Co., of Pittsburg and consulting engineer of the General Electrical Co., since 1904.

He is a member of the American Society of Electrical Engineers; the American Society of Mechanical Engineers; the Institution of Electrical Engineers of Great Britain, being proposed for membership in this society by Lord Kelvin; the American Association for the Advancement of Science and the Society of Colonial Wars.

It will be seen that Mr. Rice has had a broad experience, having engaged in the installation and operation of steam, hydraulic and electric plants and having worked up to his present high position from the bench. Mr. Rice has been very active in the American Society of Mechanical Engineers and is now chairman of the committee on papers. His wide experience and thorough acquaintance with the methods of the society make him a worthy sucessor to Prof. Hutton.

The Pittsburg Steel Foundry is making extensive additions to its plant at Glassport, Pa., and will use the additional capacity for the manufacture of car bolsters. This plant is expected to be in operation by August.

M. C. Armour, president of the Iroquois Furnace Co., Chicago, and resident partner in that city of Rogers Brown & Co., has returned from a four months' vacation spent in Europe.

DEATH OF LOUIS CASSIER.

Louis Cassier, editor and publisher of *Cassier's Magazine* and the *Electrical Age*, was killed in the wreck of a limited train carrying passengers from the American liner New York in the harbor of Plymouth, England, to London. The disaster occurred near Salisbury and resulted in the death of a number of prominent Americans. Mr. Cassier was born in Boston forty-four

LOUIS CASSIER.

years ago. At the age of fifteen he left his native city and became identified with the business of publishing. Later he founded *Cassier's Magazine* for which he secured a position of prominence in the field of engineering publications. He was also sole owner of the *Electrical Age*. About fifteen years ago he married Miss Agnes Nichols, an English girl, and daughter of J. W. Nichols. Mr. Cassier, a short time ago, bought an old homestead at Trumbull, near Bridgeport, Conn., and there his widow received the news of his death. He had sailed for England on June 22, intending to be gone only a few weeks.

The Detroit Furnace Co. will blow in about the middle of July and will run on high grade malleable iron. J. C. Clutts, formerly of Wellston, Ohio, is the president of this company, Porter McMillen is general manager, and Rogers, Brown & Co., are sales agents. This is the Wayne furnace stack which was a charcoal furnace, but has been remodeled and will run on coke iron.

The Jones & Laughlin Steel Co. has further added to its holdings on the Mesabi range by taking over the Meadow mine near Aurora, which has been operated by George A. St. Clair, of Duluth, and associates.

PERSONALS.

Joseph W. Ripley has been made general superintendent of locks by the Panama Canal Commission.

Joseph F. Sadler has retired from the Fenn-Sadler Co., Hartford, Conn., and, it is stated, will establish a machine shop of his own in that city.

William Cameron, superintendent of the Wheeling Can Co., Wheeling, W. Va., has resigned to enter into new business connections in Chicago.

A. J. Vance, who recently took up the Buffalo Forge Co.'s and the Buffalo Steam Pump Co.'s interests in Cincinnati, is located at 403 Neave building.

P. Eyermann has been made chief engineer of the Du Bois Iron Works, Du Bois, Ia. He was formerly connected with Fairbanks, Morse & Co., Beloit, Wis.

Charles Johns has assumed the position of general manager of the Interstate Iron & Steel Co., East Chicago, Ind. For some years he was traveling salesman for the Seaman, Sleeth Co., Pittsburg.

General Manager Felix A. Vogel of the Florence mine, Florence, Wis., has moved his headquarters from Florence to New York City, the change taking place last week.

Daniel J. Keefe, president of the Longshoremen, Marine and Transport Workers' Association, has been elected a vice chairman of the National Civic Federation's immigration department.

John F. Stahl, for a number of years connected with the mechanical department of the National Cash Register Co., Dayton, O., has accepted the position of superintendent of works with the Dayton Pneumatic Tool Co.

F. A. Horten, formerly chief draftsman and head engineer at the Richmond branch of the American Locomotive Co., has been appointed superintendent, succeeding H. A. Gillis, who will hereafter be located in Philadelphia.

A. M. Castle, president of A. M. Castle & Co., Chicago, iron and steel jobbers, sailed July 3, on the steamer Carmania, for Europe, where he will remain until the middle of September. Mr. Castle is accompanied by his wife and son.

J. H. O'Brien, formerly purchasing agent and acting manager of the Ford Motor Co., Detroit, Mich., has been made general manager of the Wayne Automobile Co., of that city, with J. C. Spiers, formerly with the Auto Car Co., as superintendent.

E. C. Converse has resigned from the directorate of the American Locomotive Co. Mr. Converse is president of the Liberty National Bank and a director of the United States Steel Corporation. He was elected to the locomotive board only last October.

George Sell, superintendent of the American Steel & Wire Co.'s plant at Waukegan, Ill., has been appointed superintendent of the Scott mills at Joliet.

William T. Gleason has resigned as assistant superintendent of the Clairton Steel Works, Clairton, Pa., to become general superintendent of construction for the new steel plant at Gary, Ind.

Gardiner C. Sims has resigned the position of general manager of the Marine Engine & Machine Co., Harrison, N. J., to accept the presidency of the William A. Harris Steam Engine Co., Providence.

J. J. Wilkinson, of Homestead, Pa., who for two years has been assistant superintendent of the No. 1 openhearth plant of the Homestead plant of the Carnegie Steel Co., has been appointed superintendent of both No. 1 and No. 2 plants.

John G. Wright has been formally appointed eastern manager of the Hooven, Owens, Rentschler Co., of Hamilton, O., with headquarters in New York. He succeeds William B. Mayo, who was formerly eastern manager, but who recently became secretary and general manager of the company.

Jeremiah Dwyer, president of the Michigan Stove Co., Detroit, has been making an extensive business trip through Australia. The branch of the Michigan Stove Co., established there some years ago, is in charge of Mr. Dwyer's son. Besides spending some time in Australia, Mr. Dwyer also visited China, Japan and the Philippines.

James M. Buick, auditor of the American Car & Foundry Co., has been made fourth vice president. He received his training in the old Michigan Car Co.'s shops, later becoming auditor of the Michigan Peninsular Car Co. He is succeeded by Nicholas A. Doyle, his assistant for the past year. William J. Simmons becomes assistant auditor.

Herman F. Ball has tendered his resignation as superintendent of motive power of the Lake Shore railroad, to become a vice president of the American Locomotive Co., and will assume his new duties about July 15. It is stated that he will be the executive head of the large plant which the Locomotive company has located at Providence, R. I., for the manufacture of automobiles. This branch of the business will be conducted under the title of the American Locomotive Automobile Co.

OBITUARY.

Thomas M. Bell, connected with the sales department of the American Steel Foundry Co., died at Philadelphia, June 22, at the age of 54.

Frank Diesel, a pioneer resident of Chicago, died June 26. For more than 30 years he was engaged in the manufacture of tin, retiring from active business in 1901, when his extensive plant was purchased by the American Can Co.

C. C. Knight, head of the firm of C. C. Knight & Co., one of the oldest iron firms in Philadelphia, died June 17, at the age of 77. He was a Civil War veteran, and was connected with a number of organizations at Philadelphia.

Mrs. Mary Brown Warner, wife of J. Brown Warner, former president of the American Sheet Steel Co., and now a steel manufacturer of Niles, O., died in that city, June 28. Her grandfather, James Warner, was the founder of Niles, and was an iron manufacturer.

Daniel M. Curry, head of the firm of Curry & Co., machinists at Danville, Pa., died recently at the age of 45. About ten years ago, with F. H. Vannan, he formed the firm of Curry & Vannan, but on the retirement of the latter a short time ago took over the plant, which has since been conducted under the name of Curry & Co.

Frank E. Stoneman, vice president of the American Skein & Foundry Co., Columbus, O., and interested in a number of other industrial concerns, was instantly killed in an automobile accident near that city, June 27. He had been instrumental in building up the American Skein & Foundry Co., of which he was one of the executive officers for some time, but a few years ago he retired from active participation in its affairs, and it was only last year that he again became prominent in the company. Joseph F. Davidson, general manager of the company, a fellow passenger in the auto, was seriously injured.

L. C. Packham, for many years a prominent figure in the malleable casting business of the central west, died June 30 at his home in Grand Rapids, Mich., at the age of 48. Mr. Packham was born near Hadley, Mich., removing at an early age to Springfield, O., where he received his first malleable training in the Whiteley shops. About seventeen years ago he went to Detroit, going to Grand Rapids ten years later to become manager of the Grand Rapids Malleable Co. A short time ago he left that city to become connected with the Whiteley Malleable Casting Co., Muncie, Ind. Death was due to stomach trouble complicated with blood poisoning. A widow, two daughters and a son survive him.

Two Views of the Molders' Strike.

Owing to the great importance of the present strike of iron molders, THE IRON TRADE REVIEW this week devotes considerable space to statements by leaders of the employers and employes, President Briggs of the National Founders' Association and President Valentine of the Iron Molders' Union of North America. Both gentlemen were requested to make statements. In response, Mr. Briggs submitted the speech which he delivered at the recent convention of the N. F. A. at Chicago, as follows:

Statement of President Briggs.

It is entirely unnecessary at this time to read to you any formal call in regard to the purpose for which you are here. Briefly, it is this: Strikes have been threatened in many localities throughout the country, and in some eight towns the shops have been struck. In presenting the situation to you, out of respect to several large manufacturers, who are here, but who are not members of the association, I want briefly to go over the causes which led up to this convention.

Agreements.

You, who are members, know that years ago the association attempted to deal with the molders' union as a union. For years we had an agreement known as the New York agreement. This was a conciliatory agreement, pure and simple. Taking that agreement, and adding to it from year to year, our members endeavored to make a working agreement supplementary to the New York agreement which would be satisfactory to all members of this association. That agreement worked out for awhile fairly satisfactory. The management of the union subsequently changed, and from that time on the policy of the union changed. It became evident during the last few years of the continuance of the agreement that the union leaders had certain principles they intended to foist upon the members of this association. Coincident with that change of union management, in 1904 there came a little decline in the business situation. As soon as that faction came into power, it was plainly evident there was no possibility of a foundryman making any improvements or advancement in his plant. It was simply out of the question. You must conform to their restrictions, or your shop was struck. As a result of the new management of the union, while the New York agreement was in force, there was a large number of strikes. I say to you without fear of contradiction, that during the period of negotiation with the union, we had more strikes than during any other period in the history of the foundry business.

Futility of Conferences.

In the spring of 1904, the association saw fit to grant the molders' union another national conference. There had been for four years standing committees composed of the best foundrymen who could be found to deal with the union, and to attempt to work out an agreement satisfactory to all parties. But they had practically given it up. At that time I was handling the interests of the association as commissioner. The union made a strong appeal to me to make another attempt to work out an agreement; they wanted another consultation; they wanted another national conference. I was told by the leaders of our association that they believed it was hopeless, but at the same time we thought it was best to give them every opportunity to do the fair thing—if they wished to.

A conference was held in April, 1904, and four days and four nights were spent in attempting to get a working agreement. At that conference were twenty-eight members of the molders' union, their executive board, business agents, president and vice presidents. Representing the foundrymen were eight or ten of the best foundrymen of the country. Those people worked hard, and when they were through with their deliberations, they were no nearer to an agreement than they were four years before, when they were originally directed to attempt to make an agreement.

Outcome of Conference.

The outcome of that conference was this: The council met immediately at the close of that meeting, and laid out a policy which they thought the association ought to pursue. From that moment they undertook to put it in force wherever its members desired it. The principle involved was that of an open shop, as outlined in our policy. The main features of this policy were mapped out, framed up, and put into execution, while President Frank was in the chair and while I was commissioner.

That summer there were several strikes, all of which had been started after the New York agreement had failed to conciliate or settle the differences. In Utica, N. Y., the strike with the molders was one of the most bitter ever known. In every instance, the minute any foundryman stepped over the rules of unionism in attempting to put on another apprentice, to get a little more output, or introduce piece work, or put in improved machinery, his shop was struck. Attempts to make agreements with the local unions were useless. In every one of those shops (some forty-two of them), with but two exceptions, the molders were defeated.

Philadelphia Strike.

This situation continued until October, 1905, when the molders' union decided they must find an opportunity to make a drastic demand upon somebody. They started out in Philadelphia, and struck some twelve foundries there. The coremakers had just a little difficulty; it didn't amount to much in itself, but here was the principle which they undertook to saddle upon Philadelphia; *that a coremaker who had worked but four or five months was entitled to just as much pay as a skilled coremaker, a master of his trade.* Every effort was made to settle that difficulty, but it was absolutely impossible. They proposed to enforce that rule. President Pessano went down there, looked over the situation, declared the founders were entitled to the support of the association, if they wished it. Committees composed of the best members of the association, Mr. McFadden, of Pittsburg, Mr. Carr, of Baltimore, and Mr. Flagg, of Philadelphia, passed upon the issue. They went into a very careful examination of the demands and recommended to the council that the founders be supported. The council voted unanimously to support them. The convention followed within three weeks, and voted unanimously to support them to an unlimited extent.

About the latter part of January, 1906, the molders' union found itself whipped in Philadelphia. I am convinced they must have decided there was but one thing to do to save the day, and that was to use extreme measures. In Philadelphia the molders did not want to go on strike. They were almost universally luke-warm. It has taken from two to eight of the principal officials of the union during the last three or four months, to keep those boys braced up to the position they had taken, and not go back to work. Finally, the executive board and business agents of the union said: "We will use drastic measures; we will put the molders of two or three large cities on the street, and the forces of the National Founders' Association will be so diverted, that Philadelphia must capitulate."

That was the plan, gentlemen. The tactics pursued to bring that about were very adroit and ingenious.

For the last two years, there have been no working agreements, such as had been in existence for two years prior. The union conceived the idea of presenting a demand for an agreement for a short period, to be signed, as a union

agreement, with the union; so that they can go before their men and say it is a union agreement. They felt at that time the majority of you foundrymen would tumble over yourselves to sign that agreement. But they met with such determined resistance; they found so many men who refused to bind themselves by such a document, that they had a large number of men on the street on short notice. Many of our men were affected; I cannot say just how many.

The Issue.

When this large number of shops was struck, in but two cases in the association was there any question of wages. There is a point to bear in mind. This is not a wage issue; it is a question of unionism pure and simple. When these gentlemen found their shops struck, they wanted to know what was going on elsewhere. We called a council meeting in Detroit, and had present members representing all the districts where shops have been struck, and three towns in which the union had threatened to strike. We asked them what they wanted to do. It was the duty of the association and the council to listen to these members and learn their wishes, and without exception they stated they wanted to stand firm and resist absolutely these unjust union restrictions.

It was the consensus of opinion at that meeting that the real issue at this time was nothing more nor less than union restrictions, and that any difference in wages could be settled in short order. In many towns, they said: "We are ready to pay the wages you demand. We do not blame you for asking an advance, but we are not going to stand this radical unionism any more. We are sick of it."

Chicago was hit first. They tried the temper of this town long before they struck the others. There were quite a number of foundrymen who signed up in Chicago, but the large and important shops refused.

In view of the number of shops affected, and the principle at stake, the Detroit meeting recommended that the council call a convention.

Gentlemen you are here pursuant to that call. It is for you to say whether you propose to support the Philadelphia foundries. The principle you have declared for is at issue right here. The seat of it, the bottom of it, the foundation of it, is in Philadelphia, and the union is attempting to break these principles down by disrupting our forces in that city.

Disadvantage of Union Agreements.

There are members who cannot quite see the advantage of putting their names at the bottom of a piece of paper with the words, "Iron Molders' Union," at the top. I am talking without regard to what is written between those two names. Put the words, "Iron Molders' Union," at the top, and your firm name at the bottom, and a union delegate, a union official, a vice president or member of the executive board in Chicago, for instance, will take that document over to Detroit, and flaunt it in the face of the local union, and say: "Now, you see what I have got over in Chicago; they have signed the agreement, and we have won all the tenets of unionism. We have licked them to a standstill, every one of them. They have signed up. I could read it to you, but it would take too long, but that is what we have got. Now, I want you to demand it here in this city, and you will get it."

Their next move is on the proprietor. They go after him, saying, "They have signed up in Chicago," and they find men foolish enough to believe those fellows are telling the truth, and that the document referred to is a strict union agreement.

Thus, they are trying now to resurrect these old agreements which caused so much trouble and so many strikes. If they get an agreement in one town, no matter what it contains, they will go from town to town, adding something in each case. All they want is a recognition of themselves and their principles, by having your signature on an agreement, no matter what its purport may be, so long as the words "open shop" do not appear.

Restrictions.

I want to say a word as to the restrictions the molders try to impose upon you. I am referring to bulletin No. 62 of the Department of Commerce and Labor. I have ordered a copy of that sent to every member of the Founders' Association. I believe there is food for thought in it. I believe that the union official who wrote that article, together with Mr. Commons, one of the deputy labor commissioners, has put himself on record in a way that will tend to disrupt his union, if the manufacturers of this country wish to take advantage of it, because he has stated facts which we have long been contending were true, while the union has denied them. He comes out now and acknowledges the limitations we have claimed all these years, while we have been trying to conciliate those fellows under the New York agreement.

Absurdity of Apprentice Ratio.

For example, take apprentices. He says there was never any way of getting at a basis of what the ratio should be. He also says that back in 1867 Mr. Sylvis, then president of the union, argued that the ratio was severe upon the manufacturer, that a ratio of less than one to five was a hardship to the manufacturer and the craft alike. He would not stand for any less ratio. However, they made a ratio of one to sixteen. The article winds up with the statement that there is no way of getting at an absolute ratio, and that no one knows how they ever did get their present ratio. But still they have been crying all these years that one to eight is the proper ratio.

In that same article he says, the life of a molder is somewhere from fourteen and a half to sixteen years. In one place he says fourteen and a half years. In another place he says it is less than sixteen. If you will make a little mathematical calculation out of this, the result will be easy.

Suppose you have sixteen men in your foundry and you lose one man every year, how are you going to keep the supply up for sixteen years? How many does it take to do that? Exactly four, if they serve four years at the trade. Now, that is the ratio of one to four, without allowing anything for the boy who does not stay by his trade, and for the increased output of this country.

Now, gentlemen, my point is right here, especially to you people who are manufacturers of machinery and jobbing castings, for it is at you that this demand is aimed. Just so long as you continue to respect their ratio of apprentices, one to eight, so long your foundry business is going down hill. You cannot get molders, unless somebody educates them. It is a sad confession to make, but it is true all over the country, that you cannot find a place where machinery molders are not in great demand. I challenge you to find a place, where machinery is a large portion of the business, that they are not today and have not been for years short twenty-five per cent of these high grade machinery molders.

Are you going to allow this state of affairs to go on? Are you going to allow this shortage to increase or are you going to improve the opportunity the molders have presented to place your shops in condition to educate all the molders you see fit?

Limitation of Output.

Another subject in this bulletin is limitation of output. If anybody will take these statements, and follow them to a finish, coupling them with the experience of our association, I do not see how they can get away from the conclusion that the practice of contracting with the union built that union up.

Now, gentlemen, the question is, do you want to assist in rebuilding this union, or don't you? Do you want to go over that same ground again, or don't you? That is the question for you to consider today, in my judgment, in electing whether you will support these gen-

tlemen on a strike up to the limit of carrying it to an unconditional surrender on the part of the union, or not.

The Independent Worker.

There is one thing more I want to call to your attention. That is the man who is not a member of the union. It does seem to me, gentlemen, when we get together, we are so engrossed with our own plans of defense against the unjust demands of the union that we are apt to forget the other fellow, the fellow who constitutes something like eighty-six per cent of the workingmen of this country. Are we taking care of this 86 per cent? Are we doing what we ought to do for him? I have found no man who disagrees with me on this point (and if there is I want to debate it out with him), but I do believe that at least seventy-five per cent of the members of the unions are sick, tired and disgusted with unionism, as practiced by the molders' union today. I believe seventy-five per cent of these men are honest, law-abiding citizens. I believe they would love dearly to be extricated from the condition they are in. The problem is, how are we to get them out of this situation? The boys make efforts over and over again, and they find themselves utterly helpless. They cannot do it alone; somebody must help them. In my judgment it is up to us to help every man to get out and be a free citizen, for, as one of my former employes said to me the other day, "the man who stands up to the union rule to day is the biggest slave on God's earth." He said: "I am compelled to belong to this union by fear. I do not dare to go to work in an independent shop on account of my family; they would be persecuted for life." I believe that is true in many localities.

Present Issue is Radical Unionism.

In conclusion, the issue placed before you today is clearly one of radical unionism. There are only two or three places in this country, in all these shops which are struck, in which the wage issue is at stake. I say to you frankly, I would guarantee to settle every one of them just as fast as I could get from one town to the other, if they would withdraw their radical union restrictions. The foundrymen all want to pay big wages to the men who can give big results, and in proportion to what they can give. That is what every honest workingman wants to receive also. He wants wages in proportion to what he can produce. Now, we have the issue of a life time to take before the public if you people elect to do so—that issue is purely one of union restrictions and nothing else. And if I read the signs aright, now is the time to seize the opportunity they have presented to you, to pick up the gauntlet they have thrown down, and defend these gentlemen whose shops are out to the end.

AS SEEN BY PRESIDENT VALENTINE.

Mr. Valentine responded with the following communication:

Editor IRON TRADE REVIEW:

In response to the very kind invitation contained in your letter of the 9th inst., I herewith give, as briefly as I can, a statement of the present differences between the Iron Molders' Union of North America and the National Founders' Association, and the causes which, in my opinion, led up to them.

Those who have been readers of THE IRON TRADE REVIEW have been made familiar with what was known as the New York agreement. It was nothing more than a broad recital of the fact that the members of the National Founders' Association, on the one hand, and the Iron Molders' Union, on the other, subscribed to the policy of conciliatory methods when disputes arose between them, and provided such machinery as the contracting parties deemed best suited to give this policy effect.

Let it be known, in passing, that the Iron Molders' Union for the past fifteen years has consistently advocated the conciliatory policy. It has succeeded in educating its members to recognize the good to be derived from sitting down with their employers in friendly council to discuss all subjects of mutual interest and to thrash out and effect a settlement of all matters which threaten serious differences. It has recognized the fact that, amid the startling industrial changes of the past quarter of a century, new problems have arisen that cannot all be solved by the rules which previously did good service. Problems, they are, which must be fearlessly and yet fairly discussed with their employers. It believes, too, that just as these problems are difficult of satisfactory solution by the molders, it is equally difficult for the foundrymen, with due regard for the interests of the molder, to suggest the answer. But, amid all this confusion of thought, amid all the conflict of selfish interests on both sides, it has held firmly to its faith in the ultimate triumph of the heart-to-heart discussion by the interested parties. And it has held firmly to the belief, too, that until final solution is reached, conflicting interests should patiently strive, by prescribing for each specific cause of difference as it arises, to avoid conflict which can but postpone solution and destroy the harmony and good will which would promote it.

The New York Agreement.

From March, 1899, to November, 1904, the members of the National Founders' Association, and the Iron Molders' Union met together frequently under the terms of the New York agreement to discuss their differences. This agreement was not a perfect instrument by any means, nor as comprehensive as either side might desire. And yet when we review the history of that period, we cannot but marvel at the wonderful influence it exerted in promoting peace in the foundry industry. It is not that there was *no* conflict between members of the subscribing associations, for there was; but considering the period of extraordinary expansion in iron trade which it covered, they were remarkably few.

What happened in November, 1904? The New York agreement was abrogated, not by a conference representing the original subscribers to its provisions, but by one of them—the National Founders' Association.

Why was it abrogated? Because the Iron Molders' Union was unwilling to incorporate provisions which its members were not convinced were a proper solution of some of the difficult problems which had arisen in the foundry.

But we have not space to discuss this abrogation in detail; suffice it to sdy that during 1905 and 1906 it left that branch of the foundry industry represented by the N. F. A., just as it was before March, 1899, without any means at its disposal to calmly discuss the differences of its essential interests. Nor was it in as good a position as it was in the earlier period, for peace was further jeopardized by the advice given to the members of the N. F. A. not to enter into any agreements with the members of the Iron Molders' Union which did not include in their provisions all of the clauses of the "Outline of Policy" of their association. Among these was a clause which enunciated what is now properly known as the "Open Shop" policy. Mark you, the N. F. A. insisted that all agreements should embody an "Open Shop" clause. It does not appear, and is not true, that the Iron Molders' Union insisted

that a "Closed Shop" clause should be embodied or that no agreements would be entered into.

Chief Cause of Strife.

The Iron Molders' Union believes, and statistics amply justify the belief, that wages and hours of labor are by great odds the chief causes of industrial strife; and, consistently with this belief, has ever been willing to enter into agreements with foundrymen covering and settling these points for a specific period, and covering such other points as can be mutually agreed upon by those directly interested. Such agreements I firmly believe, have eliminated and will still eliminate the great percentage of strikes in our trade.

This belief is not shared by the present administration of the National Founders' Association. No better proof of this statement can be given than a review of the causes which have led up to the strikes now in progress. I do not know of a single instance among those in which the "Closed Shop" has been made an issue by the union. I will go further and say that in the great majority of instances where demands have been made and conferences have been granted by the foundrymen, satisfactory settlements have been reached and agreements signed. The members of the Iron Molders' Union have not signed agreements with an "Open Shop" clause; nor have the members of the N. F. A. signed agreements with a "Closed Shop" provision. Why should that question be raised when it is not an issue? And yet, even when the question of an increase of wages has arisen during the present year in a low-priced foundry community, of whose competition foundrymen in higher priced localities bitterly complain, the "Open Shop" catch-cry has been made to do service.

Before proceeding to a more specific reference to our present strikes, permit me to say, that we are not so egotistical as to say that all the mistakes of these unfortunate controversies have been made by the members of the National Founders' Association. We are all prone to err, and sometimes when fears and passions have been needlessly aroused or when opportunity has not been afforded for the play of the judicial mind, strife has been precipitated which, under more favorable conditions, might have been avoided.

The Philadelphia Strike.

Perhaps none of our present strikes has been so well advertised as that now going on in Philadelphia. Let us trace its cause. In October, 1905, the coremakers of that city sent the following communication to the foundrymen:

"Gentlemen:—Owing to the advance in the cost of the necessaries of life, and the outlook for better trade in general, we respectfully petition you for an advance of 25 cents a day to all the journeymen coremakers in your employ, making a rate to coremakers $2.75 a day and upward. We respectfully request an answer."

No definite reply having been received from this notice, a committee from the union waited upon each firm, and in each instance were informed that the foundrymen would not discuss the matter with them. The next step was to have the coremakers' committee in each shop interview their employer relative to the desired advance. Again the coremakers were informed that the foundrymen could not discuss the merits of the proposition with them, as the matter had been placed in the hands of their association and would have to be taken up with its officers.

After having received this information, efforts were made by both the local and national officers to secure a conference, at which the sole question to be discussed would be that of wages. Personal interviews to this end were held with both the officers of the Philadelphia Foundrymen's Association and the National Founders' Association, and in both instances the officers of these organizations refused to grant a conference or discuss the merits of the question.

The result was inevitable, for can any fair-mided man say that the coremakers of Philadelphia were making extravagant demands when they asked that their wages be advanced from $2.50 to $2.75 per day? I make the statement, and I make it advisedly, that fair and courteous treatment of this reasonable demand would have prevented the serious and unprofitable conflict that has followed.

Strikes and Causes.

Let me enumerate a few of the strikes involving the members of the N. F. A. and their causes:

Chicago—An increase in the wage rate.

Boston—An increase in the wage rate.

St. Paul and Minneapolis—An increase in the wage rate.

Buffalo—An increase in the wage rate.

Anthracite District of Pennsylvania—Nine hour day.

Milwaukee—Nine hour day and increase in wage rate.

Missouri Valley—A minimum rate and a nine hour day.

Toledo—An increase in wage rate and nine hour day.

That is a list of the chief centers where strikes of greater or less magnitude exist. Let me supplement it with a list of some of the localities where, similar demands having been made, a conference between the foundrymen and the molders' representatives effected a peaceful settlement:

Cincinnati—Granted a nine hour day.

Cleveland—Granted a nine hour day.

Indianapolis—Granted an increase in wages.

Central New York—Granted in some instances an advance; in others a nine hour day or both.

New York District—(Comprising New York City, Brooklyn, Jersey City, Newark and Plainfield), granted an increase in wages.

This list incudes the more important centers and localities where conflicts exist. I desire your readers to note that it was not in insignificant centers, nor where inconsiderable numbers of men were involved that conferences established peace. It is true conferences were not so successful in Buffalo; but the issues were confused there. Issues were injected which should not have been, and which I firmly believe, were thrust to the front by the representatives of the National Founders' Association, for the purpose of precipitating a conflict.

In enumerating the causes of strikes, I have recited what the molders regard as the salient feature of their demands. Each locality had questions of its own to consider and to embody in its agreement. In some instances they touched upon vital issues; such for example, as piece work, apprentices, and so on. These same questions have been up in previous years and by the exercise of a little common sense by both parties were successfully overcome. The same could have been accomplished in 1906 had it not been that the policy of the Iron Molders' Union of treating local disorders or conditions with local specifics was repudiated by the members of the N. F. A. and an effort made to force upon us the provisions contained in the "Outline of Policy," "Open Shop" included.

The Present Conflict.

To sum up, I believe that the present conflict is due primarily to the abrogation of the New York agreement and the subsequent policy of the administration of the N. F. A. to force down the throats of the members of the Iron Molders' Union their "Outline of Policy." They are guilty of deliberate misrepresentation and falsehood who proclaim that the issue of the present struggle is the "Open Shop." That issue is one of the administration of the N. F. A. It is a cry to conjure with in the present era. It has been made to do service in the most unholy of causes, and has come to be looked upon by the members of the Iron Molders' Union as a "shib-

boleth" designed to hide the real purpose—the destruction of their organization. Wages and hours of labor have constituted the chief features of all the molders' demands this year. They have asked for agreements covering these points for a stated period, believing that, thereby, the material interests of foundryman and molder can be best subserved. And finally, the persistency with which the officers of the N. F. A. have forced the "Open Shop" question to the front, and the campaign of antagonism, abuse, misrepresentation and slander they have inaugurated have convinced the officers and members of the Iron Molders' Union that their true and ulterior purpose is the disruption of their organization.

We stand ready today, as ever, to meet organized or individual foundrymen in fair and friendly conference; we are ready to lend our assistance in the promotion and maintenance of peace in the foundry industry; but we would be regarded as poor types of men, indeed, were we to submit, without a struggle, to the issue now forced upon us.

Respectfully yours,
Jos. F. VALENTINE,
President.

MORGAN CONSTRUCTION CO. CONTRACTS.

Worcester, Mass., June 28.—The Morgan Construction Co., has begun work on a large steel, fireproof structure for the International Harvester Co., of Chicago. It is said the building will be one of the largest all iron buildings in that city.

The Morgan company also is constructing two mills for the Youngstown Sheet & Tube Co., Youngstown, O. The foundation for the smaller mill is to be finished immediately. The other and larger structure will be laid in the fall. It is to be a skelp mill.

For the Georgs-Marien-Bergwicks and Hutten & Verin Co., Georgmarein-Hutte, Germany, the Morgan Co. will build a very large mill of best modern American construction. German labor will be largely employed in the work but Worcester experts will be in charge.

A combination merchant mill will be erected at once in Tredegar, England, for D. S. Whitehead & Co. In order to complete all these contracts, the Lincoln steel plant of the Morgan Co., is being rushed at full capacity and many new tools and machines are being put in. A big addition has just been made to the plant, doubling the capacity of the erection floor.

MEXICAN ORES.

RUNNING HIGH IN IRON FOUND IN GREAT QUANTITIES.

United States Interests Will Develop Them.—Some Mexican Possibilities.

(Special Correspondence.)

Mexico, D. F., June 26.—A recent iron discovery in the state of Guerrero is attracting considerable attention. These are mines now operated by the Guerrero Iron & Timber Co., of which the president is W. M. Ritter of Columbus, Ohio, one of the largest hardwood manufacturers in the world. The state of Guerrero expects much from the activity of the company, which was organized quite recently with a capitalization of one million dollars, gold, all paid in. It controls two million acres of land, the largest solid block of timber land in the republic of Mexico, and probably one of the largest in the world, for on the tract are eight billion feet of standing timber, for the cutting of which the company is putting in saw mills, and for the haulage of which it is planning the building of a standard gauge railroad to the Pacific, with a connection with the Mexican Central Railway at its Balsas river terminus. The company has absorbed part of the timber lands and part of the iron mines owned by John J. Moylan, who is the company's vice president. He discovered this great property and it is supposed that there are at least three thousand men now at work to bring the proposition to a practical point. It will require a 250 kilometer railroad to place the property in touch with the Pacific at Marquez Bay. All the harbor frontage is owned by John J. Moylan & Co.

The iron mines themselves are located in Guerrero very close to a number of others, the extreme distance not exceeding twenty miles one from the other. Because of their proximity, the ores from these mines will find ocean outlet at the Port of Acapulco or the Port of Sihuatanejo and Port Marquez, but the nearest safe harbor is probably Acapulco, which has what is known as the second best natural land-locked harbor in the world, its only superior being that of Sydney, Australia. The Bay of Marquez is five miles south of Acapulco. Vessels of any size can enter either of these harbors. The harbor of Sihuatanejo is not as good as the other two and before any vessels of large size could enter heavy expenditures would be necessary. But the placing of this tract in connection with the Mexican Central would make a natural outlet also to the city of Mexico and thence to the United States all by standard gauge route. The state of Guerrero is very mountainous, but no serious difficulty it is stated will be encountered in the construction of this railroad line to the coast. The Mitchell Mining Co. has already surveyed and located an electric line from the Bay of Marquez to its copper mines at La Dicha, which are very close to the iron mines of Moylan & Co. It finds easy grades and the Moylan Co. does not expect the cost of construction of its own road to exceed $25,000 per mile, especially as it controls an immense water power from which 20,000 horsepower may be developed for electric traction.

These deposits contain both hematite and magnetic iron, also manganese in fairly large quantities. The purity of the ore and the high percentage of metallic iron is very remarkable. There are millions of tons of ore assaying 65 to 69 per cent iron. These mines are quarry propositions. The ores are remarkably free from phosphorus and sulphur. Their character is indicated by the following analysis made at the laboratory of the Illinois Steel Co. from general samples taken every six inches across 400 feet.

Iron	Phos.	Silica	Manganese
68.30	0.007	0.65	0.84

Samples of the lowest grade ore found analysis:

Iron	Phos.	Silica	Manganese
63.05	0.006	1.32	1.46

These monutains have been referred to as the Mountains of Iron. They probably contain as much if not more iron ore than the celebrated Sierra Mercado of Durango, referred to so glowingly by Humboldt when he visited Mexico in 1802. The amount of iron in the Guerriro mines depends altogether whether the ore bodies in width and length as indicated in the outcrop extend to depth or not. With these ore bodies extension to great depth is plain. Mr. Moylan is of the opinion that they extend for 1,000 feet in depth and, if so, they are among the largest iron deposits in the world. In many places the ore stands in bold bluffs from 200 to 300 feet high. Ore is also found in solid masses in the creeks at the bottom of the hills. A tunnel driven into the mountain struck ore that stood in a solid mass 600 feet high. The formation is so strong that there is little doubt that this body of ore is solid and in places throughout the whole mountain.

President A. C. Pessano, of the Great Lakes Engineering Co., has closed a contract with C. W. Elphicke, of Chicago, for a 7,500-ton ore carrier for 1907 delivery. The new boat will be 440 feet over all, 420 feet keel, 52 feet beam and 28 feet deep, of arch construction.

Additions to the Illinois Steel Co.'s Plant.

A NEW UNIVERSAL PLATE MILL, AND A RAIL MILL

Both to be Electrically Driven.

Further additions to the capacity of the South Chicago works of the Illinois Steel Co. are in progress. The company recently completed the erection of an additional blast furnace, seven open-hearth furnaces, two additional soaking pits for the 40-inch blooming mill, and has partly finished a third reheating furnace in the structural mill. It now has completed plans for the erection of a 30-inch universal plate mill and a light rail mill. The drawings of these mills are shown herewith, and their location in the plant is indicated on the accompanying map of the works. The rail mill adjoins Green Bay avenue and Eighty-third street in the northwest corner, and the plate mill is in the southwest section at Eighty-seventh street and Mackinaw avenue, where it is in close proximity to the sheared plate mills and open-hearth furnaces. Both mills will be electrically driven, and neither hydraulic or steam power will be used anywhere in either. Even compressed air, instead of water, will be used for removing the scale from the slabs as they are rolled.

The plate mill will roll universal plates from 6 inches to 30 inches wide, up to 80 feet long, and will have a capacity of 7,500 tons a month. The diameter of the rolls is 24 inches, and their length, 67 inches. This mill with its many unique features is the production of the engineering force of the South Works in collaboration with the engineerss of the United Engineering & Foundry Co., Pittsburg. It is so constructed that the vertical rolls can be brought much nearer the horizontal rolls than has been the practice heretofore, and the vertical rolls can be removed without disturbing their driving shaft and at the same time its possible to lift them out vertically.

The rail mill will roll sections from 12 pounds to 45 pounds, and will also have a capacity of 7,500 tons a month. Only the plate mill will draw on the open-hearth capacity of the plant, as it is intended to reroll second quality rails of standard section, and billet and bloom seconds in the rail mill.

The dimensions of the plate mill building are 83 feet wide by 700 feet long. A storage yard 300 feet long by 83 feet wide, served by a 15-ton electric traveling crane of 80-foot span, makes a right angle connection with it and the slabbing mill. Slabs for this mill will be furnished by the present 30-inch slabbing mill, which also supplies the two sheared plate mills. These will be carried from the slab mill on narrow gauge cars and deposited beneath the runway of the crane, elevated to the charging machine and pushed into the furnace by means of an electrically driven rack and pinion mechanism.

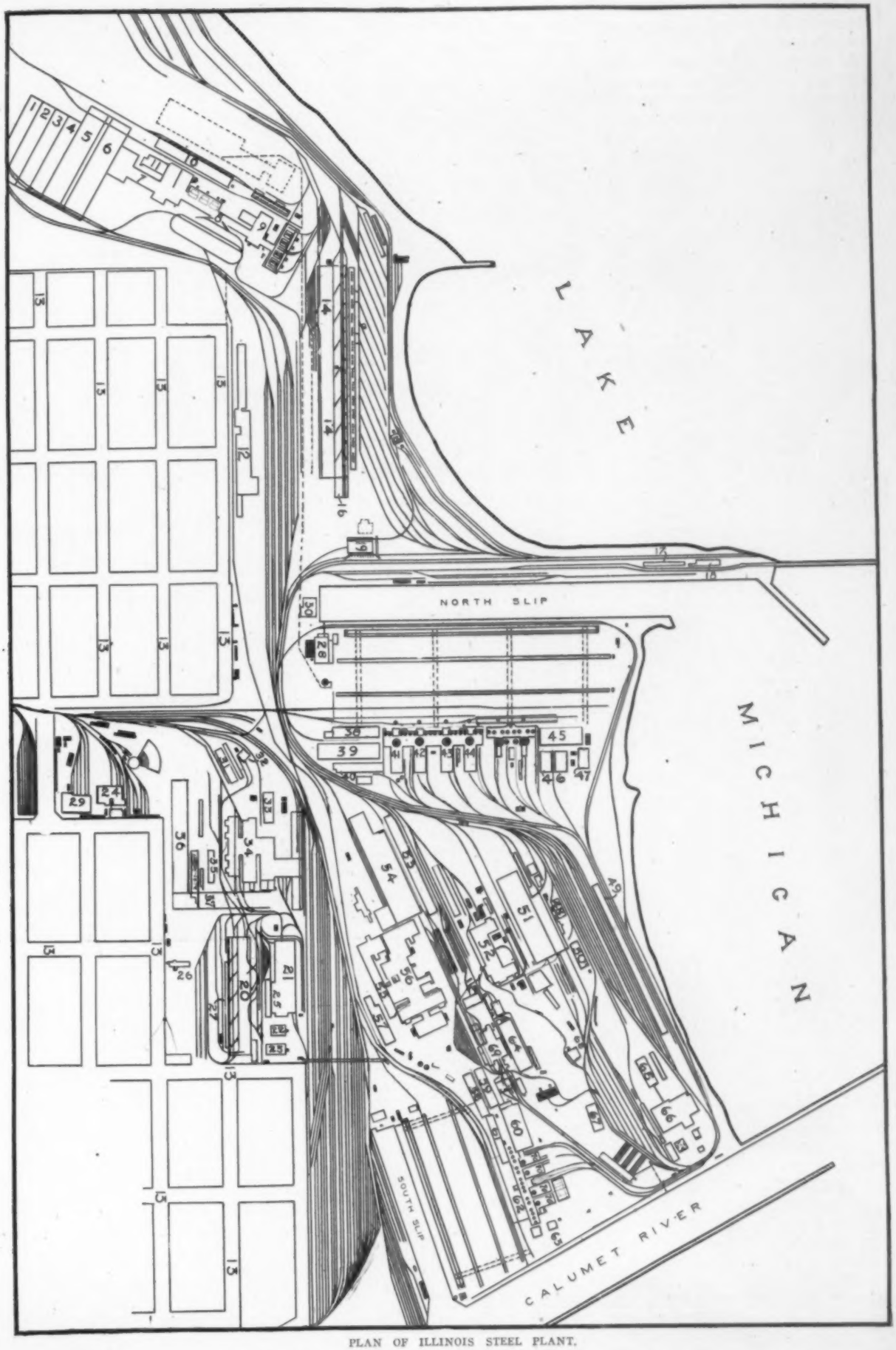
The continuous heating furnaces are of the regenerative type, and of the company's design. The mill will be equipped with the usual plate hot beds and side straightening tables. There are two hot beds, each 180 feet long by 60 feet wide. Two shears will also be installed, both of which will cut up to 30 inches wide. The United Engineering & Foundry Co. will furnish the shears, mill and mill tables. The finishing end of the mill is served by two 10-ton electric traveling cranes, which will load directly into the cars on the standard gauge track alongside. One 30-ton crane will also be installed over the mill for handling rolls and changing machinery.

By far the most important feature of the plate mill, however, is the fact that it is to be the first reversing mill in this country which will be entirely electrically operated. The results which will be obtained by this first installation will be watched with the very greatest interest by the entire iron and steel world, since, if successful, it will mark the inauguration of a new era in the driving of mills. It is understood that there are some installations in progress in Germany at the present time along the same lines. The rolls are to be driven by direct current motors, capable of a torque of 345,000 pounds at one foot radius, which, if exerted at the maximum speed, would necessitate the motors developing approximately 10,000 horsepower.

The mill motors are two in number, both mounted on the same shaft, this arrangement being adopted to secure small diameters and, therefore, low flywheel effects for the revolving elements. The maximum speed at which they are designed to run is 150 revolutions per minute, and they are expected to reverse from full speed in one direction to full speed in the opposite direction in the exceedingly short time of three seconds. In other words they are designed to accelerate at the rate of 100 revolutions per second. The motors are supplied with current from a motor-generator set, consisting of an alternating current induction motor, direct connected to a direct-current generator. Mounted upon the same shaft with the revolving elements of this machine is a very heavy flywheel. It is expected that, notwithstanding the enormous fluctuations in effort demanded

Key to Plan of Plant.

1, 2, 3, 4, 5, 6, STRUCTURAL MILL, FINISHING END.
7. STRUCTURAL MILL.
8, 9. BLOOMING MILL.
10. STRUCTURAL MILL AND BLOOMING MILL BOILER HOUSE.
11. ROLL SHOP.
12. RAIL MILL NO. 5. (NEW).
13. CITY STREETS.
14. OPEN-HEARTH NO. 2
15. DROP NO. 5.
16. MIXER BUILDING.
17. LOAM SHED.
18. SINTERING PLANT.
19. RETRACT PLANT.
20. OPEN-HEARTH NO. 1.
21. SLAB MILL.
22. LABORATORY.
23. MAIN OFFICE.
24. C. I. S. & E. SHOPS.
25. GAS PRODUCERS.
26. HOSPITAL.
27. OPEN-HEARTH GAS PRODUCERS.
28. CENTRAL PUMPING STATION.
29. C. I. S. & E. SHOP.
30. OLD PUMPING STATION.
31. BRICK SHED.
32. DROP NO. 3.
33. PLATE MILL BOILER HOUSE.
34. PLATE MILL.
35. PLATE MILL GAS PRODUCER.
36. UNIVERSAL PLATE MILL.
37. STORAGE YARD.
38. BLAST FURNACE ENGINE HOUSE.
39. BLAST FURNACE BOILER HOUSE.
40. CENTRAL ELECTRIC STATION.
41. BLAST FURNACE NO. 5
42. BLAST FURNACE NO. 6.
43. BLAST FURNACE NO. 7.
44. BLAST FURNACE NO. 8.
45. BLAST FURNACE ENGINE HOUSE.
46. BLAST FURNACE BOILER HOUSE.
47. ALTERNATING CURRENT ELECTRIC STATION.
48. PATTERN SHOP.
49. BRICK SHED.
50. CARPENTER SHOP.
51. FOUNDRY.
52. MACHINE SHOP.
53. RAIL MILL LOADING DOCK.
54. RAIL MILL FINISHING END.
55. RAIL MILL BOILER HOUSE.
56. RAIL MILL.
57. RAIL MILL GAS PRODUCER.
58. BESSEMER MILL BOILER HOUSE.
59. BESSEMER MILL ENGINE HOUSE.
60. BLAST FURNACE BOILER HOUSE.
61. BLAST FURNACE ENGINE HOUSE.
62. STOCK HOUSE.
63. DROP NO. 4.
64. BLAST FURNACE BOTTOM HOUSE.
65. CEMENT STORAGE.
66. CEMENT PLANT.
67. OLD PATTERN SHOP.
68. DROP NO. 2.
69. BESSEMER MILL.
70. BLAST FURNACES NO. 1, 2, 3, 4.



PLAN OF ILLINOIS STEEL PLANT.

of the mill motors, the power demanded of the central station will fluctuate to a very slight extent.

The opportunities for saving in this arrangement consist, first, in the possibility of securing electric power generated very cheaply from blast furnace gas by means of gas-engine-driven units; and, second, from the fact that power is demanded only to accomplish the actual work of rolling. Calculations of the power requirements which may be expected to accomplish the work of rolling have been gone into very carefully, and very substantial savings are expected.

Rail Mill No. 2.

This mill consists of three stands of a 24-inch mill, two stands in line for rough and finishing, and an intermediate intermediate stand of leading rolls, 100 feet tandem. Both trains will be driven by Westinghouse alternating-current motorms. The moeach of 1,800 horsepower at a speed tors are direct connected to the train, of 80 revolutions per minute when working billets and blooms, and 120 revolutions per minute when rail reducing from rails. These motors are not reversible and are equipped with heavy flywheels to reduce the peaks of the loads due to rolling.

The main building, including the hot beds, is 60 by 426 feet. The motor shed west of the main building is 160 by 33 feet. The finishing end of the building is 360 feet in length by 45 feet wide, and will have four straightening presses, four punches, a cold saw and a number of inspection beds. Six gas producers, built on the Duff patents, and located in the south end of the main building, will supply the gas for heating the continuous furnaces. Coal for these is brought up on a trestle and dumped into bins and then shoveled into the producers. One of the two continuous heating furnaces, of the regenerative type, is 21 feet 6 inches wide by 27 feet long, to take in broken lengths of rails and blooms from 42 inches to 7 feet, and the other 17 by 40 feet. The mill has tilting tables on both sides of the roughing stand and on the front side of the intermediate stand. For further arrangement of tables see the illustration of mill. The rails will be straightened by a roller straightening machine and gag press, and there will be three movable swing hot saws located 100 feet from the finishing rolls. The United Engineering & Foundry Co., Pittsburg, will supply the two roll trains, which are of the Illinois Steel Co.'s design, and the roller straightening machine and gag press. The hot beds, two in number, are 32 by 60 feet each.

An interesting feature of this mill is the number of roll changing stands which are placed convenient to the mill for the purpose of building up the rolls with their equipment of guides, etc. The rolls are taken out of their respective trains in saddle. Over the motors, one 50-ton electric traveling crane, with a span of 33 feet, will be installed. The main building, which has a span of 60 feet, will be equipped with two 25-ton cranes for roll changing and handling of machinery, which will run the entire length of the building. Rail seconds for rerolling are loaded into the cars and conveyed to the south end of the light rail mill, where they are unloaded by a locomotive crane and deposited on storage beds. Another locomotive crane is also provided at the north end of the mill for handling and distributing the finished product in the respective storage beds. The storage yard is served by a 10-ton traveling crane, which loads the billets, blooms and rails on skids to be charged into the furnace.

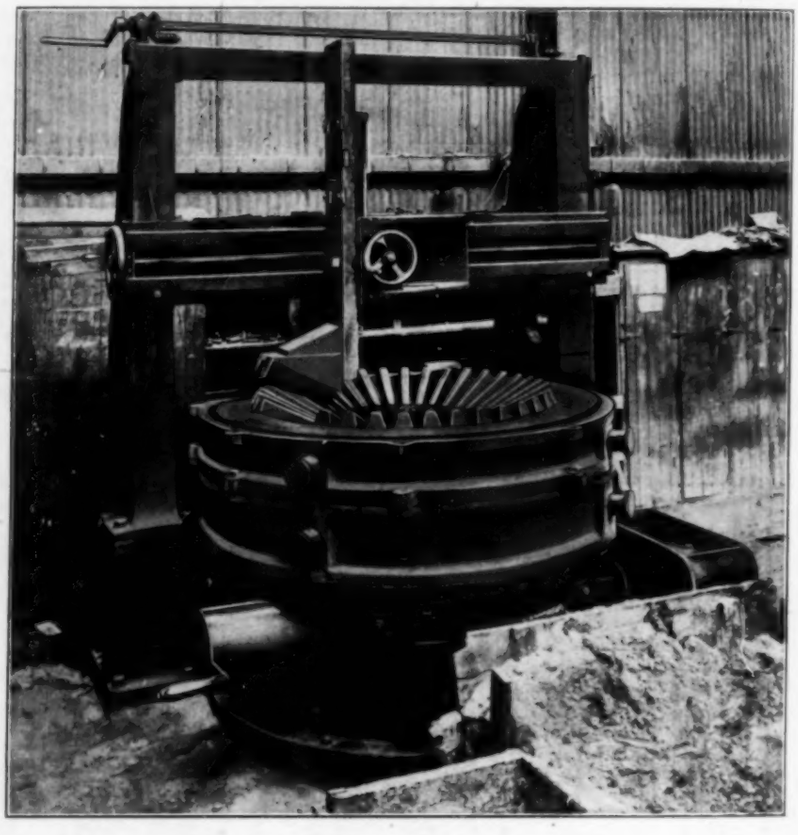
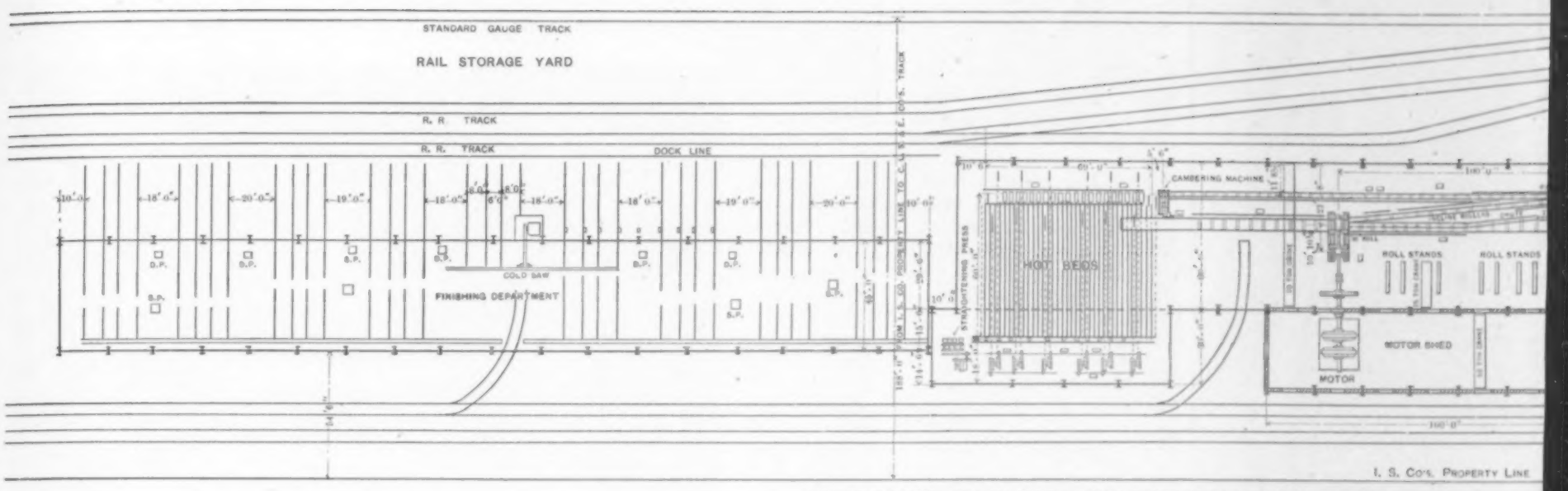


FIG. 1.—MACHINE FOR MAKING GEAR MOLDS.

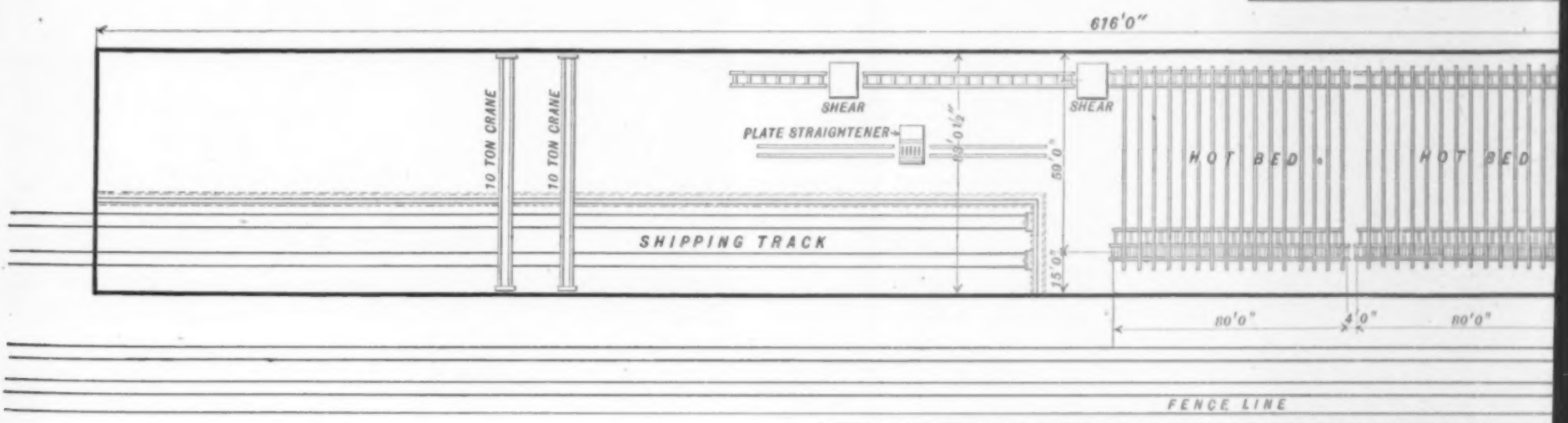
London Headquarters.—During the annual meeting of the American Institute of Mining Engineers which is to be held in London this year, commencing on July 23, those in attendance are cordially invited to make their headquarters at the London offices of the Allis-Chalmers Co., 533 Salisbury House, Finsbury Circus, where mail may be directed in care of J. W. Young, manager of the offices, who also is a member of the institute.

MACHINE MOLDED CAST GEARS.

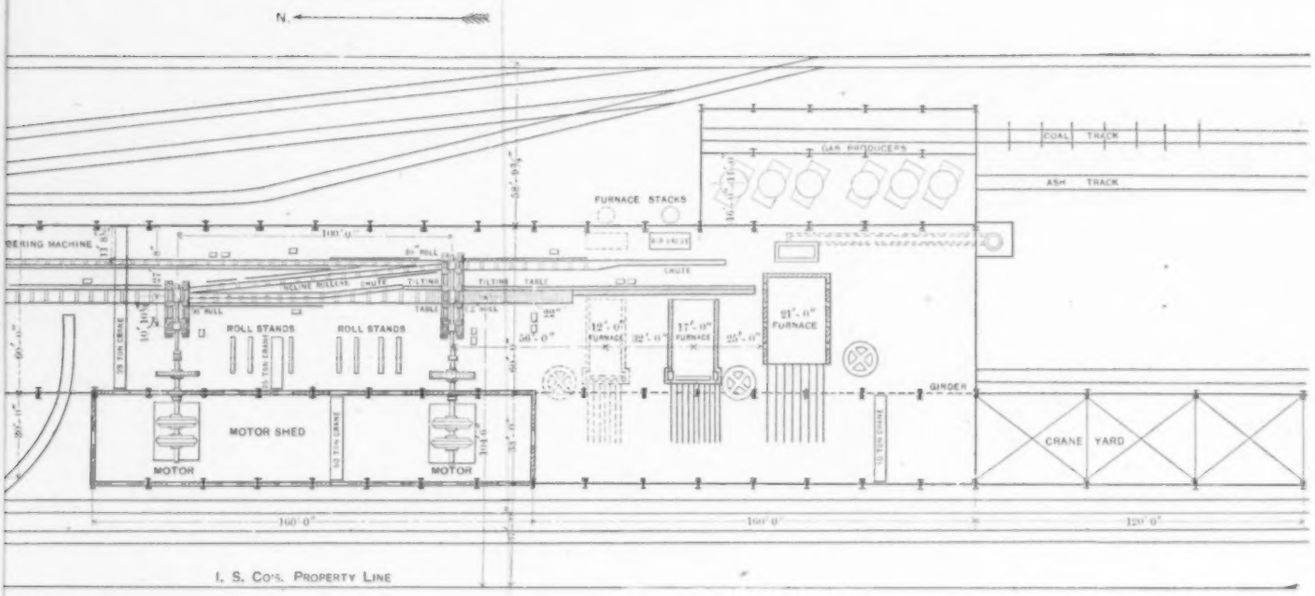
For heavy duty, such as is required in rolling mill service and the main transmission gears in some other lines of manufacture, it is necessary to have not only very strong gears, but also gears which will feed accurately. If a gear is so rough that one tooth takes all the work that should be distributed over two or three, the high tooth is practically sure to be broken, no matter what material the gear is made of. Hence, for this class of work, the two essentials are accuracy in the workmanship and strength in the material. The gears used in rolling mills are subjected to exceedingly violent shocks, as the engines are reversed or as blooms enter or leave the mill. Cast iron cannot be used for this purpose, for even high grade air furnace metal has not sufficient strength to resist the constant shock. This is especially true when a gear is partly worn out. Gears for this class of service must be made of material which is not only strong, but which will wear for a maximum length of time. Cut gears have been used in some cases, on account of their great accuracy, but there are several objections to this class of transmission machinery: First, the expense of a cut gear is very great, especially in the case of large work; second, the cutting of teeth in a heavy rim often exposes



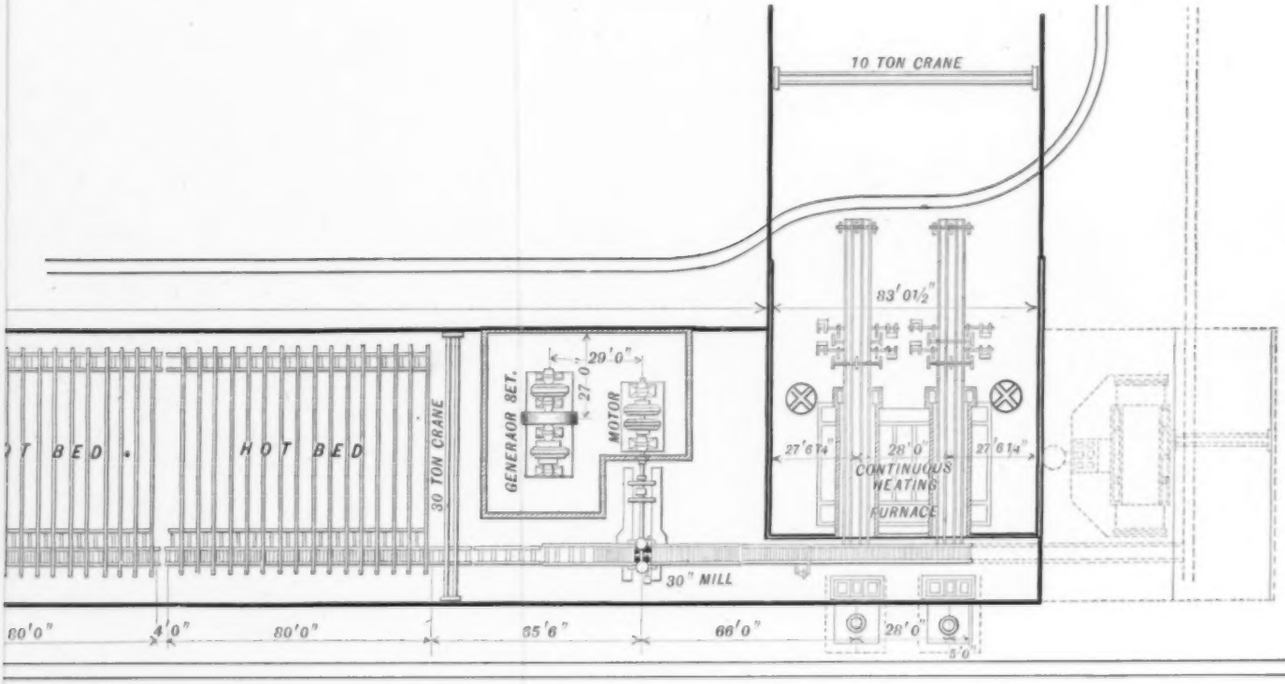
NEW LIGHT RAIL MILL OF THE ILLINOIS STEEL CO.



NEW UNIVERSAL PLATE MILL OF THE ILLINOIS STEEL CO.



ILLINOIS STEEL CO.



E LINE

THE ILLINOIS STEEL CO.

serious blow holes, which weaken the teeth greatly. This is due to the fact that it is difficult to cast a sufficiently large plain rim to machine teeth from, and, at the same time, insure a solid casting, free from shrinkage or blow holes. When the teeth can be cast accurately to form, there is an advantage, arising from the fact that the metal solidifies from all surfaces, and hence is densest near natural surfaces. The projecting teeth usually solidify clear through, and if there are any blow holes, they will be located in the rim below the roots of the teeth. This insures sound, dense metal in the teeth, giving maximum strength and maximum life or resistance to wear.

FIG. 2.—GEAR MOLDING MACHINE MAKING HERRING-BONE GEAR TEETH.

There are several difficulties which arise with the attempt to cast accurate gears: First, the making of accurate patterns for the entire gear is an expensive proposition, while if the gear is cast in cores which are arranged in segments, each core containing several teeth, the unequal shrinkage of the cores in drying is sure to result in a distorted gear. This distortion destroys the accuracy of the pitch, and results in excessive wear on certain parts of the gear. These difficulties are very effectually overcome by the patented molding gear machines used in the plant of the Mesta Machine Co., at West Homestead, Pa.

At the first glance, one of these machines looks like a boring mill. It consists of a suitable table which is rotated by an index mechanism. Above the table is supported a cross rail carrying a head upon which the templates or patterns are supported. This is very clearly shown in Fig. 1, which illustrates the use of this machine for making a bevel gear mold. An ordinary steel flask is first rammed up in the usual manner, a spindle stepped in the center and a bed struck off corresponding to the base of the tooth. The only pattern necessary consists of two accurately formed teeth. These are properly spaced on the machine, lowered upon the bed already referred to and molding sand rammed between them, thus forming the portion of the mold coresponding to the space between the two teeth in the gear. The template is then raised, the table given a partial rotation by means of the index mechanism and the template lowered in the proper position for ramming the next tooth. In this way, each tooth is accurately rammed in its correct position, and the spacing must be uniform, as it is determined by an accurate index mechanism. Any form of tooth can be constructed, provided t he template will draw off from the tooth, and spur gears, bevel gears or herringbone gears can be made successfully on the machine. A larger machine of the same type engaged in making a mold for a herringbone gear is shown in Fig. 2. The difference in expense between making an entire pattern and the having to make only one or two teeth will be appreciated by all foundrymen.

FIG. 3.—CORING UP A LARGE GEAR MOLD.

Then, too, the matter of storage of large gear patterns is an exceedingly difficult problem, while, with the use of the molding machine, only the teeth or templates have to be stored, and these do not take up much room.

FIG. 4.—CAST INTERNAL GEAR.

Fig. 2 clearly shows the line of demarkation between the sand backing first rammed into the flask and the facing sand rammed between the teeth. It will be noted that the latter is new, strong sand, while backing sand is made up largely of heap sand.

After the molds have been made on the machines, they are taken to a suitable drying oven and baked. The arms and interior of the rims are then formed by means of cores.

Fig. 3 shows a large gear mold being cored up. Two of the cores forming the inside of the rim have been placed in position, but the cores for forming the arms have not, as yet, been set.

The step for the spindle for sweeping up the seat for the cores can be plainly

seen in the center of the mold. The coring of the smaller gear mold is shown in Fig. 6. The arms in this case are formed in the cores, and the core for the hub is placed in the center. Such a mold as this would be cored by a suitable gate on the hub.

One thing that is worthy of attention in this illustration is the especially heavy, rigid rigging used by the Mesta Machine Co. in their foundry. It will be noted that the flask is made up of steel castings, and that it is heavily ribbed, so as to enable it to resist any strain that may be brought to bear upon it. Good rigging costs money, but is very efficient in the production of good work. After the castings have been poured and taken from the mold, they are liable to contain serious strains, due to the form of the work and to irregular cooling. To overcome this, the gears are all annealed before being shipped from the foundry. Fig. 7 shows one of the annealing ovens with the trucks drawn forward. These trucks consist of heavy iron plates, upon which

FIG. 5.—CAST WORM GEAR.

the castings are placed. Between the bottom of the plates and suitable cast runways in the floor, there is a series of 5-inch iron balls. When the castings have been placed upon the trucks, they are run into the oven, the door closed and the temperature raised until the casting is at a dull, red heat. Steel castings have a certain critical point, known as the recalescent point, at which crystallization takes place. If the steel is heated just above this point, all previous crystallization will be destroyed, and upon cooling the piece, it will have a fine, dense grain structure. If the work is heated too far above the recalescent point and then cooled, it will have a coarser or more open structure, due to the formation of crystals or a crystalline structure, as the work cooled to the recalescent point. This point or temperature depends upon the carbon content of the steel, and upon certain other factors. A knowledge of these factors is necessary to enable the manufacturer to turn out work of uniform quality.

From the foregoing, it will be seen that the annealing has a two-fold object, the first being to remove strains and the second to improve the structure of the metal, which will increase its strength. After the castings have arrived at the proper temperature, the oven is sealed up and allowed to cool slowly for several days, when the work is drawn out.

The investment necessary for equipment to carry on this heat treatment is very great, but it enables the manufacturer to turn out a uniform product.

Some of the possibilities of machine molded gears are shown in Figs. 4 and 5. Fig. 4 shows a large internal gear which was made on one of the molding machines shown in the previous illustrations, while Fig. 5 shows a worm gear made in the same manner. The man standing at one side will give an idea of the size of this casting. Many of these large gears are made for use in connection with the machinery manufactured by the Mesta Machine Co., though many are sold to other manufacturers to be used in connection with heavy machinery turned out in connection with rolling mill equipment and subjected to very severe service.

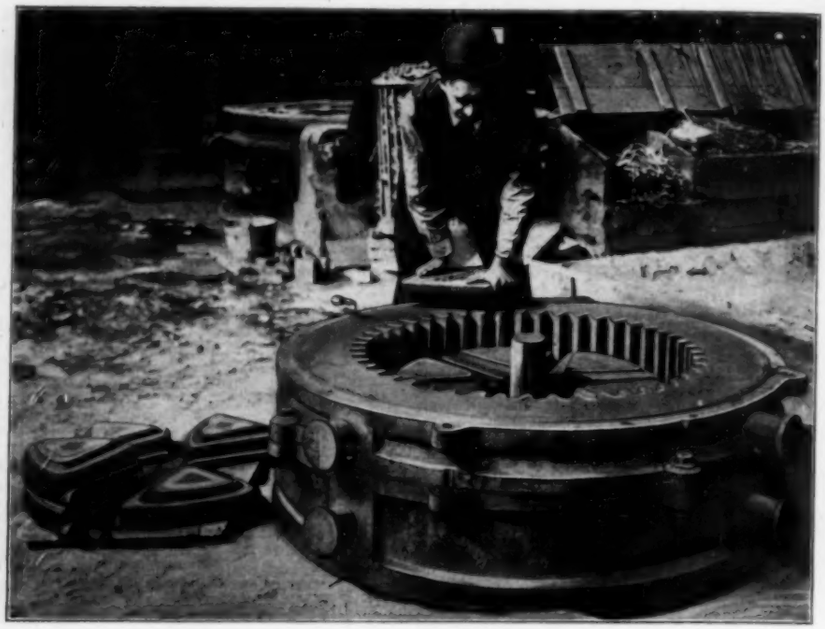


FIG. 6.—CORING UP A SMALL GEAR MOLD.

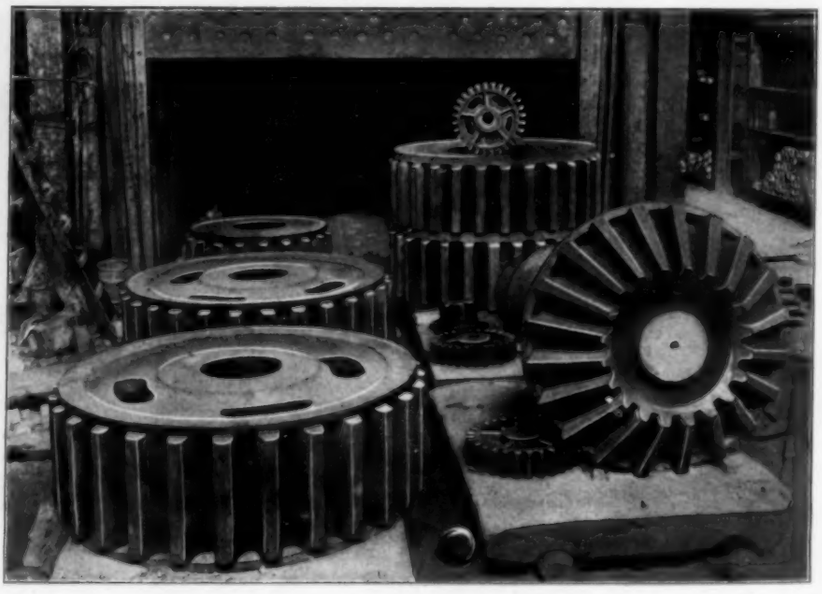


FIG. 7.—ANNEALING OVENS FOR GEARS.

A TOOL FOR CUTTING DOWN COSTS.[1]

BY F. E. WEBNER.[2]

There is no royal road to success. That every man is the architect of his own fortune in machine building as well as in other walks in life becomes evident to the student in analyzing the mechanical and financial successes of leading machine builders of our wonderful country. Success is not an accident although seemingly combinations of circumstances may at times bring about conditions which of necessity are prerequisite to success and thus hasten the achievement of the desired end. The greatest successes are achieved by those men who are endowed by nature with the happy faculty of picking able lieutenants to perform or oversee the minutiae of details; this is an age of specialists and one man cannot perform successfully the functions of every department head in a shop or factory, but one man can and in the great majority of cases one man does keep in very close touch with all important events and conditions in the, possibly enormous, enterprise under his supervision and direction. It is done by the judicious discernment of department specialists and allowing them, in their work, a sufficient latitude in which to bring out all their latent talents and possibilities and then applying such to the general good of the cause.

Several years ago an examination was made of a certain steel industry on which it was desired to float an issue of bonds; investigation disclosed the fact that while the principal would be amply secured, the interest could not be certain owing to the desire of the executive head to exemplify "multum in parvo" resulting in the absolute failure of every high priced man on the plant to successfully perform those functions for which originally he had been well chosen. The frequent changing of men in the important positions kept the discipline and particularly the efficiency of the force at a very low degree with the result that, while the plant physically and mechanically was so situated and equipped as to be almost ideal, yet the costs of production were prohibitive and exceeded the selling price so frequently as to ultimately put the concern out of business, although on individual shop orders when the costs were figured "by rule of thumb" as was the practice there, a sufficient and even liberal margin was shown.

The reader will in all likelihood concede that in the management of an army, which in many ways may be likened unto a business proposition, the successful general cannot at one and the same time be the colonel, major, captain and on down the list of commissioned and non-commissioned officers to the private, but, through military channels, he *must know* that each individual is performing his proper duty at a high degree of efficiency, thereby insuring the proper relationship and contact of one unit with another, thus in turn forming the complete whole.

The Successful Superintendent.

In machine shop practice the successful superintendent must know through his foremen that each individual part is correct—that the various parts when assembled into an element are so formed or machined as to bear proper relationship to one another and in turn that the elements, when collated into the perfect whole are all so properly intermeshed with each other that the complete machine runs smoothly with as little power as possible and that it will do all that was expected of it and perhaps more. In the details it very frequently happens that individual workmen with bright ideas think out short cuts by new mechanical combinations thereby becoming the means of increasing the efficiency of the machine mechanically and perhaps commercially as well, and on this thought hinges the theme of this and the articles following in this series.

In the thoroughly modern shop the management is fully conversant with the costs of product step by step; that is to say, the cost of each integrant can be known, also the cost of the element, and in turn the cost of the complete whole. In many cases it is a fact that the knowledge of bare costs per unit would avail nothing more than the satisfaction of knowing that the costs were well within the selling price which satisfaction may or may not be worth the price of cost finding, for cost finding per se, is expensive yet when properly used it is a paying investment; if the system followed is a good one it may and by right ought to be considered a valuable asset, the dividends and returns from which are to be measured only by the ability of the management and others concerned in the correcting of weaknesses or evils disclosed. Floating soap is considered as having saving qualities, not for the reason that it will not soften and dissolve when in water, but because, being at the surface, it is the more readily seen and is, most naturally, immediately removed. An efficient cost system will as time proceeds disclose all manner of conditions not previously thought of and the gist of these articles is that the knowledge of the truth that may be automatically brought to the surface enables the management to effect savings here and there and to bring about a desirable grade or degree of efficiency of workmanship and discipline which is almost priceless in value and insures the maximum in results with the minimum in cost.

Little Leaks.

A little leak will sink a big ship and too often does a local ailment affect a business or parts thereof to such an extent as to mean the difference between loss and gain on individual shop orders or even for an entire department.

The fable of the clock parts arguing with one another as to which enjoyed the most importance is no doubt familiar to the reader and if instead of mainspring, hands and face, the three physical construction or producing elements be substituted a parallel condition will exist in that material, labor and manufacturing expense are the three prerequisite elements and all are equally important for the reason that no two could be combined without the aid of the third, as for instance given castings, etc. for a simple type of drill press and an all around machinist to make it; a prime essential to the completion of the drill is a place to do the work and the tools to do it with, which latter two items constitute the manufacturing expense in the case. If the place happens to be a good sized shop with but the one man working it, the fixed charges on the shop together with cost of heat, light, power, insurance, etc., etc., will amount to a considerable burden on the product of one month, which for example may be put at two completed drills; with ten men employed there are certain lines of expense items which are not increased at all and possibly such would not be increased with the addition of a hundred men while some few items would be increased at perhaps a very small ratio. Certain other items would likely be increased considerably per unit especially if not carefully guarded by an adequate cost system to disclose conditions. In the elements other than expense the cost per unit of product would be decreased in all probabilities; as firstly, the material being purchased in larger quantities would insure a less cost per unit and secondly the labor being specialized by classes and groups would minimize the cost thereof by precluding the necessity of assigning high priced men to any or all of the many subordinate tasks incident to the making of a machine—in

[1]This is the first of a series of twelve articles on cost keeping.
[2]Certified Public Accountant, Cincinnati.

required in supplying of mere brawn.

As Output Increases.

Every manufacturer knows full well that the larger the volume the smaller the cost per unit, but alas every manufacturer does *not* know that certain conditions which serve very nicely with a small output are disastrous if allowed to remain when scaling up the output ten fold. The shop working but the one man does not need a cost system; the shop employing fifty men or a hundred men does need a cost system. Even at this day and age there are a great many concerns that figure costs by guess work at every point, which is little better than that plumber who when asked for an estimate on a given piece of work orally calculated, "four times naught equals naught; seven into five you can't—I will do the job for two hundred and seventy-five dollars." The manufacturer may say, "Well, the rough castings weigh four hundred and eighty pounds and average me four and half cents per pound; our lathe hands are getting $3 a day; drill press men $2.75, etc., etc., etc., so that labor costs us on the finished machine $220 all told and to the material and productive labor we add 15 per cent to cover non-productive labor expense. This plan is working out very nicely for us, I am, however, a little worried over the fact that at our inventory period just passed our material cost totals came out about seven thousand less than our financial books show and I am having the boys go over the inventory again, as I am quite sure there must be some mistake in it—our expense, too, usually has run about 15 per cent and this past year it shows as 21 per cent and I can't account for it, for surely, that new line of punch presses we put out cannot make all that difference, and I had the costs on these pretty closely figured, too." And so it goes; yet, even if costs under such conditions come out to a cent as a total, it yet proves not very much, as the law of averages will have been applied to an entire year, which is really a long time and may have passed many and varied conditions which will not correspond with conditions of former years or years following; one line of machine may have run away below estimated cost and some other line away above estimated costs, yet the variations may offset one another just as two errors of one thousand dollars each in a trial balance may offset one another and the errors be not disclosed until too late to repair the damage which may occur.

A modern cost system which brings about results deals alone with the present and where conditions, be they what they may, cause the cost of production to rise, the management should know by some infallible barometer just how much the rise or fall and furthermore what are the causes and also very quickly what is the remedy to be applied. The annual period should, in the great majority of producing establishments, be displaced by the monthly or four week period, enabling the management to know facts as time proceeds instead of having to wait a year and sometimes a long time over that before results are obtained and then have them presented in an unsatisfactory condition and unfit for use where new trade conditions have been brought about. The four week period making thirteen periods in the year is advisable where the pay roll is weekly or bi-weekly and the calendar month period is advisable where the pay roll is monthly or semi-monthly. This plan of having the closing period articulate with the pay roll period enables the cost department to have a proof on labor figures without having to "dig" for it.

An Interesting Case.

In the matter of cost finding a case occurred within the past year where a large manufacturing concern which had then but recently installed a cost system, so recently in fact, that the innovation had not yet been received with sufficiently hearty favor by the superintendent to warrant, in his own mind, the placing of any confidence in the figures given him. A request for a price on forty units was received from a Mexican concern; the estimate was made and in the due course of events sent to the prospective purchaser and was answered by an order duly executed. The goods were made and shipped and immediately thereafter came a duplicate order. In the interim the cost department made the startling discovery that the labor costs had alone nearly equaled the selling price, the correctness of which figures the superintendent immediately disputed, which resulted in a careful review of all calculations both in the estimating department and the cost department with no change whatever in the figures of either department and although the cost records showed a flat loss of about $9 per unit or $360 all told, yet the superintendent instructed that the former selling price be quoted, which was done, and in the second order the superintendent was much in evidence on the job as it progressed; yet by his presence and his careful scrutiny of all figures he was not able to cut down the labor cost quite a dollar, but although the incident caused him to feel a certain amount of chagrin and pique at seeing his ideals shattered, he was converted to the new way from that time and, incidentally, it is remarkable what an impetus a superintendent or others in authority can give to any factory plan if he has the purpose to do so and how disastrous will be the results at times if he has not such a purpose or, perchance, if he damns it by faint praise.

The Practical Man.

It has been said that a practical man is one who carries out the plans that the theorist devises; that is found to be true in all walks of life where many good men serve faithfully the cause of the banner under which they are enlisted, yet along certain lines outside of this beaten path are not gifted with inventive genius and hesitate to take the initiative; some even are so backward about accepting innovations that they may under some conditions, be likened to a horse which on being brought from a burning barn breaks away from the leader and rushes back into its old familiar stall. Some superintendents mean well, but, figuratively speaking, they must first be blindfolded and the old ways obscured before they can be brought to a place where they can see the light under the new condition of things, after which they become valuable to both the management and themselves in enlarging on the ideas furnished them and in a thousand and one ways making valuable use of the information that has been disclosed through the efforts, very likely, of a person whose technical knowledge of the product is limited.

The weaknesses disclosed by a scientific cost system are legion; the truth may be forced on the management from unlooked for quarters and again figures may be presented by different groupings to indicate an entirely different state of affairs than was supposed to exist and again conditions known to exist in a general way may be prominently emphasized although not always acted upon wisely after the truth is laid bare. If the cost system has disclosed the facts and the information is not made use of, the system has as fully served its purpose as has a semaphore on a railroad, which has thrown up a danger signal and at the same time set a derailing switch—if the engineer ignores the signal he runs off the derailing switch—just so will the short sighted manager under like conditions.

Did Not Keep Pace.

A certain concern which is now on the wane and attributes its ultimate

fate to "the trust" grew from a very modest beginning to a place among the leaders of its kind. The business grew but the "Department of Records" did not keep pace with the manufacturing, yet for many years the concern made money in a large and increasing volume until it came to a place where the business was top heavy and while more or less vaguely the senior member saw the truth of the arguments put forth by the younger members that the capacity had been reached in the crowded, cramped and ludicrously scattered quarters in the heart of the city, yet the old gentleman would not consent to the building on the outskirts of the city a modern factory, for which plans had been prepared, until such time as they were assured of a renter for the old buildings and while waiting for the desired renter at a more or less fancy price, the option on the proposed land expired and concurrently the business began to fall off owing to inability to make prompter shipments. They had taken on more orders than they could handle with their equipment and the shortsightedness of the senior member for larger things lay in the fact that he did not, if necessary, abandon entirely the old plant, trusting to the increased business and the decreased cost of production to more than absorb the interest and taxes on the old plant. An attempt to establish a scientific cost system in this plant failed miserably owing entirely to physical conditions, yet the system as operated did prove conclusively that the non-productive labor such as trucking and repeated handling of parts was almost double that of the productive labor. It showed up outrageously high costs caused by starting in a factory order for five hundred units and later on in subsequent departments splitting the order that a part might be rushed through and again splitting the rushed part that some might be extraordinarily rushed and so on *ad finem* with the result that at the installation of a going inventory part of factory orders were found, some six and eight years old, stored in obsolete places and some exposed to the weather and in an almost worthless condition; some parts of the same kind stored in as high as thirty different places wherever the eye of a trucker happened first to light on a vacant space. Finished product was often robbed of parts to facilitate the work of some careless individual workman, thus necessitating the cost of going over the machine by a special inspector or oftentimes the sending of an inspector to the purchaser's town to learn why the machine would not act properly. All of which means very high costs of production, so high in fact, that when examination was made looking toward amalgamation so low an offer was made for the plant (or more strictly speaking the scattered plants) as to be considered prohibitive and therefore refused, but the so-called trust is fast eating into the business by sheer force of superiority of production methods.

In the operation of a cost system where there are obstacles which it seems impossible to overcome, it is almost a foregone conclusion that the physical conditions are wrong and need attention and without exception where the physical condition is wrong the cost is too high and can be cut down by proper action. In focusing this whole subject down to a given point, it can be seen that the exact knowledge of costs synthetically and analytically enables the farsighted manager to proceed with a graphic chart before him; if he withholds the remedy he does it purposely.

BRITISHERS PROFIT BY LAX AMERICAN METHODS.

A number of important points in connection with the manufacture and sale of machinery in Great Britain, in so far as it affects American trade, are pointed out by Consul Marshall Halstead, of Birmingham, Eng.

In British mercantile and engineering circles, he states, they are sometimes mildly sarcastic about the ease with which catalogs can be obtained from American manufacturers, disclosing designs, and even giving best discounts. In one case, which he knows, an applicant for catalogs and quotations of American products was a designer in the employ of an English concern, making articles in competition with the American firm, and it profited greatly by making copies of American articles. An application on a private letterhead or from a private address to an English firm, he states, would not receive any attention, and when made on business stationery would generally result in a personal call from one of the English concern's travelers, the object being to size up the applicant before quoting prices or letting him have the catalog.

Consul Halstead also states that the many visits of British manufacturers to American factories are bearing fruit, one iron and steel manufacturer stating that he "had been through some of the shops in America where the same kind of work was done and believed his new shops were ahead of the Americans."

An English manufacturer is hardly regarded as up-to-date today unless he has seen American factories. No one who has not lived in England during the last seven or eight years can realize how great the awakening has been here, nor how changed the British mental attitude is regarding new ways of doing things. There has been much wise and clever adaptation to British cheaper labor needs of American machinery ideas. It has often been found profitable to simplify highly organized American machinery, even separating processes and dispensing with complicated parts requiring skilled mechanics to manage them, substituting instead hand-guiding manipulation for automatic work.

It is held, and seems to me and to many other Americans here who know England as well as they do America, to be correct that in the making of certain classes of articles this simplification and division and the employment of girls as operators, who are paid from eight shillings ($1.94) to 15 shillings ($3.64) a week, enables manufacturers here to produce at figures competitive with much of the work of the most modern and highly developed automatic machinery. Americans could have sold a great many of these simplified machines which still, I should remark, retain the essential principles; but American machinery manufacturers would not, I have been told, bother with the trade.

One machinery merchant here, after trying in vain to get certain American machinery manufacturers to make the kind of machines he knew could be sold here—and he told the American machinery merchants there were a great many minor business people here who could not afford the costlier type of American machinery—ultimately had designs for these machines prepared and had them made here. He could not, however, command the trade, as he did not have sufficient capital. Several machinery manufacturers have developed a very large trade out of this type of simplified American machine for use with cheap labor. Large quantities of small articles are now cut from bar stock where formerly they were cast or produced upon simple lathes, the turnings for each of the several tools in a turret lathe being done by hand. It has revolutionized the brass trade.

It is reported that T. S. Clark, formerly of Pittsburg and Alfred Perkins, formerly treasurer of the Sharon Steel Hoop Co., are about to erect a blast furnace at Erie, Pa., and that the plant will be built on the lake front of that city, convenient to the ore docks and receiving and shipping facilities.

COMPARATIVE DESIGNS AND WORKING OF AIR FURNACES.[1]

BY RALPH H. WEST.

The excellent articles on air furnaces by Mr. L. G. Blunt in the October, November, and December, 1905 issues of *The Foundry* led me to believe that if further data could be obtained, these might be compiled in a manner to interest many foundrymen. With this in view, reports were solicited from those who could assist in this work.

In soliciting these reports it was stated that they would be kept confidential and appear by numbers only.

Nevertheless this will not prevent giving due credit to the firms that were so broad-minded and kind to render the service in question.

There are many different designs of air furnaces, and all are governed by the experience derived in getting the

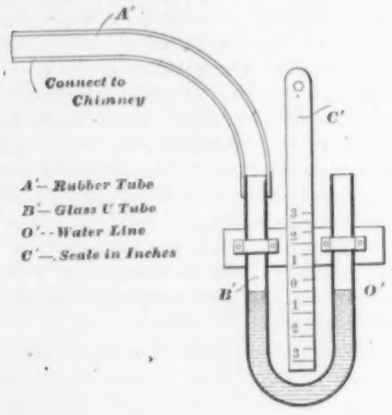


FIG. 1.—DRAFT GAGE.

flame most effective with the least consumption of fuel, to obtain the greatest durability in the lining of the furnace, the tonnage required, the character of the fuel, the supply of air, as well as the draft to obtain the best economy in fuel and speed in melting.

Some of the firms using air furnaces, and hence knowing their advantages, have from two to six in their foundry. There are firms who having two furnaces and requiring but one heat per day will run same alternately, others will take a heat out of the same furnace daily. The advantages of an air furnace over a cupola are: First, in enabling a founder to obtain lower sulphur in remelts. Second, in affording an opportunity to change the silicon, manganese, phosphorus or total carbon contents of the heat while in a melted state. Third, in permitting the obtaining of large bodies of "hot metal" at one tap. Fourth, in obtaining a

[1] A paper presented at the Cleveland June, 1906 meeting of the American Foundrymen's Association.

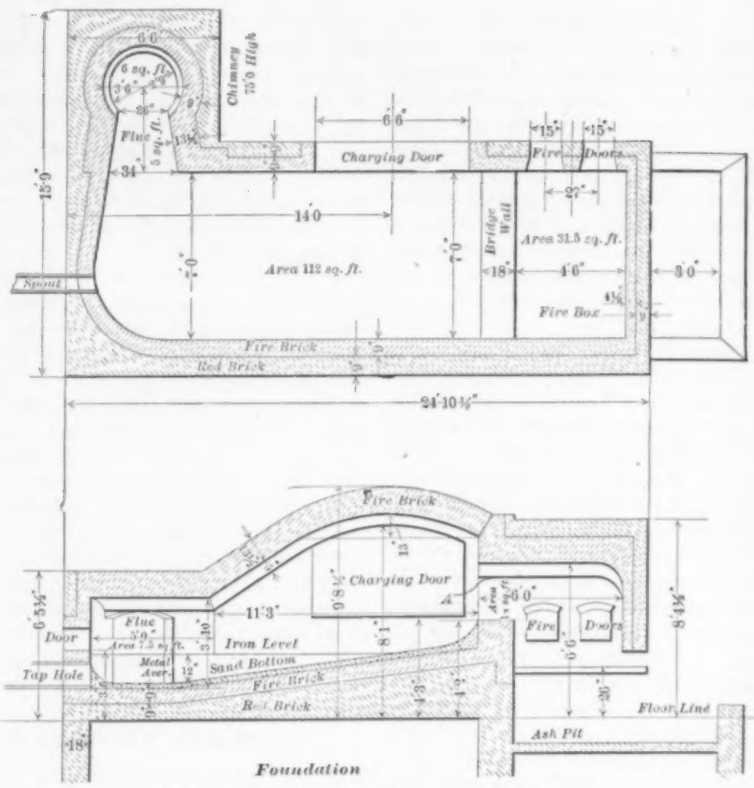


FIG. 2.—CAMEL BACK AIR FURNACE—15 TON.

stronger product from the same brands of iron through the refining action, freedom of contact from fuel, and the ability to manipulate the metal before it is tapped into the ladle. Fifth, in melting large bodies of broken castings or scrap that could not be charged into and melted down in a cupola.

It requires greater skill and care to operate an air furnace than a cupola. There is everything in working the fire, and every precaution must be taken to insure the iron coming down "hot" at the start. If this is not accomplished the temperature can only be raised by hard firing at the expense

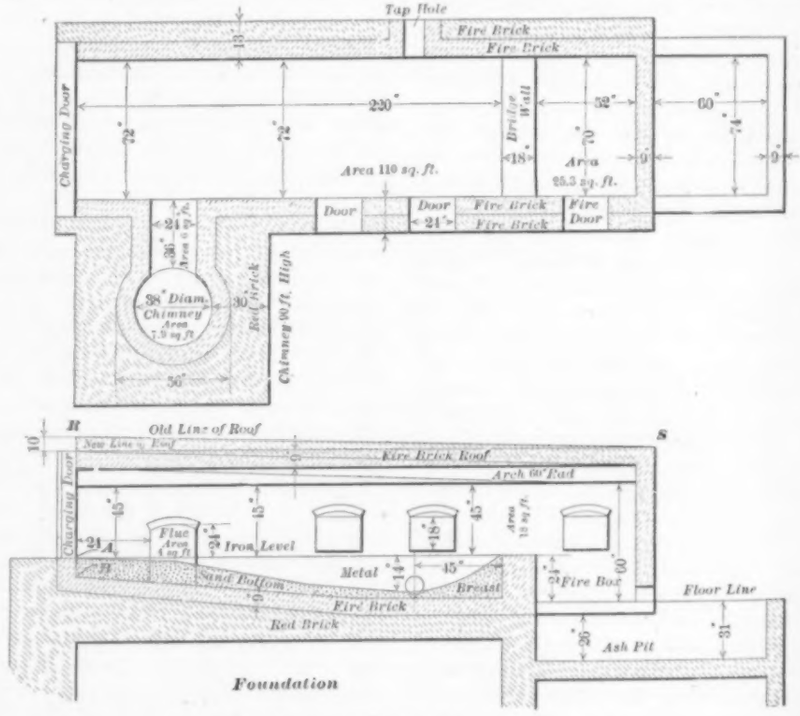


FIG. 3.—AIR FURNACE, CAPACITY 10 TONS.

of loss in silicon, etc. A novice may attempt to take a heat out of the cupola and be successful, but should the same person try his hand at an air furnace, his chances would be excellent to make a very expensive fizzle.

Owing to air furnaces generally depending upon natural draft to promote combustion, the state of the atmosphere has much to do with the speed of melting, and obtaining of "hot metal." Again the same area and height of a chimney will not suffice for the same style furnace in all localities. The variations of surroundings in the matter of hills or high buildings that can affect the force of winds, can cause a more variable action in the speed and quality of the melting, than where a chimney is free from such influences.

In Fig. 1, there is shown a draft gauge that is a very valuable appliance to use. There are times when doubt may exist as to whether some trouble is due to the fuel, the draft, or the furnacemen; but by the use of such a gauge it is at least possible to define how far the draft was responsible for poor results and narrow the investigation to two factors, the coal and the melter.

The Foundry of January, 1906, has a valuable article by Mr. N. W. Shed, advocating the use of forced draft and heated air. He illustrates his idea which it will be to the interest of every one affected to study.

In taking up a review of the types presented herewith, the following firms are to be credited for tendering a report on the designs and workings of their furnaces:

Bethlehem Steel Co.'s iron foundry, South Bethlehem, Pa. Tendered by Mr. William J. Shannon.

Buffalo Foundry Co., Buffalo, N. Y. Tendered by Mr. W. W. Shed.

A. Garrison Foundry Co., Pittsburg, Pa. Tendered by Mr. H. C. Shaw.

Lorain Foundry Co., Lorain, O. Tendered by Mr. Geo. F. Stoney.

Watertown Arsenal, Watertown, Mass. Tendered by the commander, Major F. E. Hobbs.

Westinghouse Machine Co., East Pittsburg, Pa. Tendered by Mr. W. A. Bole.

In taking up the furnaces in the order of their number, we first have Fig. 2, which is of the design known as the "camel-back." The firm owning this furnace has two of them and operates them alternately.

In making the bed or furnace bottom silica sand is used, the depth ranging 1½ inches to 6 inches according to the size of the heats, so as to always maintain the same level of slag line as far as practicable. To make room for the large heats the minimum depth of sand is used. All the sand is never taken out, merely enough to remove such bodies as may cling to the slag. For ordinary heats about two wheel barrows of new sand will renew the bottom in good shape. Slab lumber is used to pile iron on and thus protect the bottom when charging the furnace. No trouble has ever been experienced with the bottom. The heaviest iron is charged right behind the bridge wall as near the fire place as possible, which by the way is the hottest place in the furnace.

The greatest burning out of the lining occurs in the throat right over the bridge wall in the top as at A.

Westmoreland county unscreened or "run of mine" gas coal is used. Every carload is refused if found to contain sulphur higher than 1.30. As a rule it ranges from .85 to 1.10. The melting ratio averages about 3½ pounds of iron to one of coal. It generally takes 6½ to 6¾ hours to melt down 24,000 pounds. The charge consists of old rolls and charcoal pig iron.

First iron commenced to melt about two and a half hours after starting the fire. The iron when all melted is "very hot."

It will be well to state at this point that the state of fluidity is designated as "dullish," "medium," "hot," and "very hot."

For patching material, fire clay, lake sand and pieces of old fire bricks are used. A whole new arch is needed at least once a year. The end charging furnace is preferred.

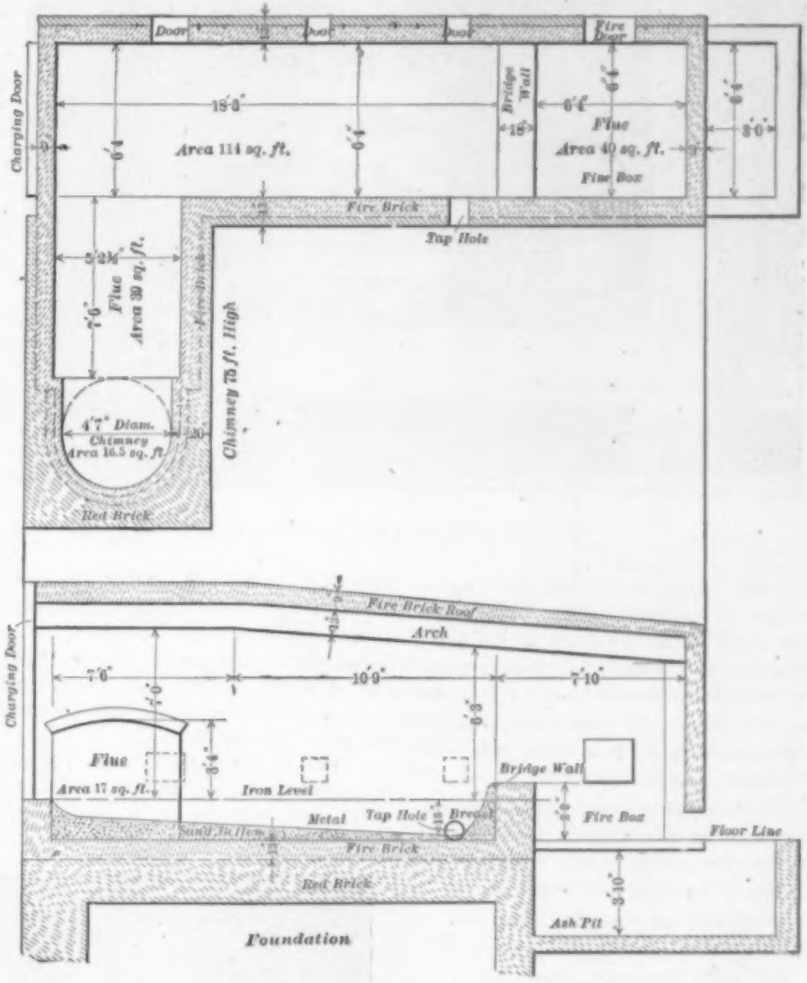


FIG. 4.—AIR FURNACE, CAPACITY 45 TONS.

Ten Ton Air Furnace.

This furnace as shown in Fig. 3 has a straight level top. It was originally ten inches higher at the charging end as in keeping with the dotted lines R. S. The end at R was recently brought down to the level shown, because the flame drew along the top so much that good "hot iron" could not be obtained.

In filling the bottom a good brick foundation 13 inches thick was put in and then silica sand was put in about three inches thick at a time and burned the same as is done in open-hearth furnaces, until the shape required was obtained. For patching up any holes,

FIG. 5.—CHARGING END OF FURNACE.

sand the same as is used for cupola bottom is utilized. This silica sand was about 12 inches thick at the lowest place. No trouble has been experienced with the bottom and only at the tap hole where the cinder and iron remains after the cast is taken out, does it require any patching.

The heaviest iron is charged on the high part of the bottom, just in front of the flue. This is the hottest place in the furnace for melting.

For patching the slag line etc., a good ganister lining material is used and works very well. "Run of mine" Westmoreland bituminous coal is used, but the big lumps are broken to be no larger than a cocoanut when charged. The greatest burning out aside from the slag line occurs at the flue entrance and between side doors.

A heat of heavy hard scrap and pig iron, taken April 19, 1906 gave ten and a half tons in six hours at the melting ratio of about 1 to 4. The first iron was seen to melt about one hour after starting the fire. The iron was not tapped until one hour and thirty minutes after it was all down, and was "very hot."

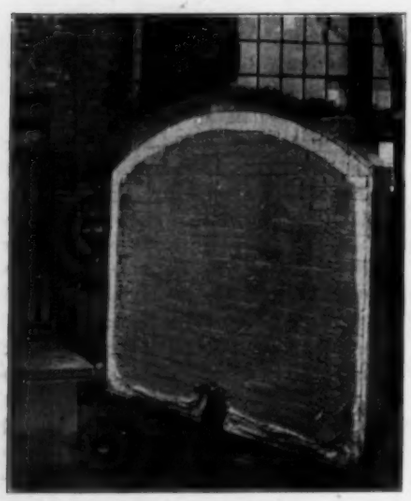


FIG. 6.—FURNACE DOOR.

45-Ton Air Furnace.

This furnace may be called a combination of the Pittsburg furnace and the camel-back. Accompanying the plan and elevation, views are shown in perspective in Figs, 5, 6 and 7. Fig. 5 shows the charging end filled with pig iron, and the furnace ready to be closed, with the charging door seen at Fig. 6. Fig. 7 shows the fire box end of the furnace and the metal tapped and running into a ladle.

The excellent and highly recommended beam that is used for this furnace (illustrated in the October 1905 issue of *The Foundry* is shown in Fig. 8, and by virtue of this device, the heavy iron is charged up as close to the bridge wall as possible. Those not having such facilities for handling heavy scrap would have great difficulty in attempting to do this with end charging furnaces. Burnt core sand taken from the chipping shop floor is used for making the bottoms. Fig. 4 is a plan and sectional elevation of the furnace.

A heat taken April 10, 1906, out of the furnace shown in Fig. 4 of thirty-five net tons was run down in nine hours. The first iron was seen to melt in forty minutes after starting the fire. The iron when all melted is reported as being "hot." The character of iron charged was heavy machinery scrap, weighing from one to ten tons each. For this heat 3 5-8 pounds of iron was melted with one pound of coal. A later heat of twenty-five tons used

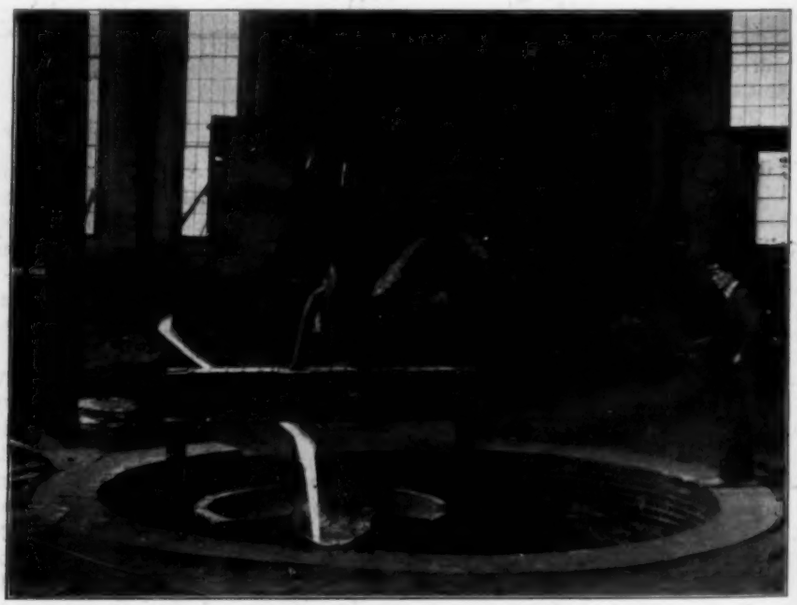


FIG. 7.—TAPPING THE AIR FURNACE.

12,705 pounds of coal or a melting ratio of 4 to 1; forty-five-ton heats have been melted down at the ratio of five pounds of iron to one of coal.

For a later heat than recorded above the device as shown in Fig. 1, was used for measuring the draft by entering the chimney near the base. When the furnace first started to melt, a ¾-inch draft was recorded and at the close of the heat when the furnace was the hottest, a one-inch draft existed.

It is stated that the hottest part of the furnace is just behind the bridge wall and from that point to about five feet from the bridge. The greatest burning out of the furnace, Fig. 3, is said to be on the sides of the fire box, rather than the roof. The furnace is run daily and the cost of lining or repairing, averages about $24.00 per month.

"Are now using two parts of silica sand and one part of fire clay, and making preparations to grind up fire brick bats to be used with fire clay for patching purposes."

Much stress is laid on the character of the roof shown. It is said:—"We believe this form makes a stronger roof and a stronger furnace; that the roof does not give way so easily; that the ease of charging is increased, and that in general it is superior to the usual method of making the roof in two distinct heights, as shown in Figs. 9 and 10, which are modifications of the regular Pittsburg type.

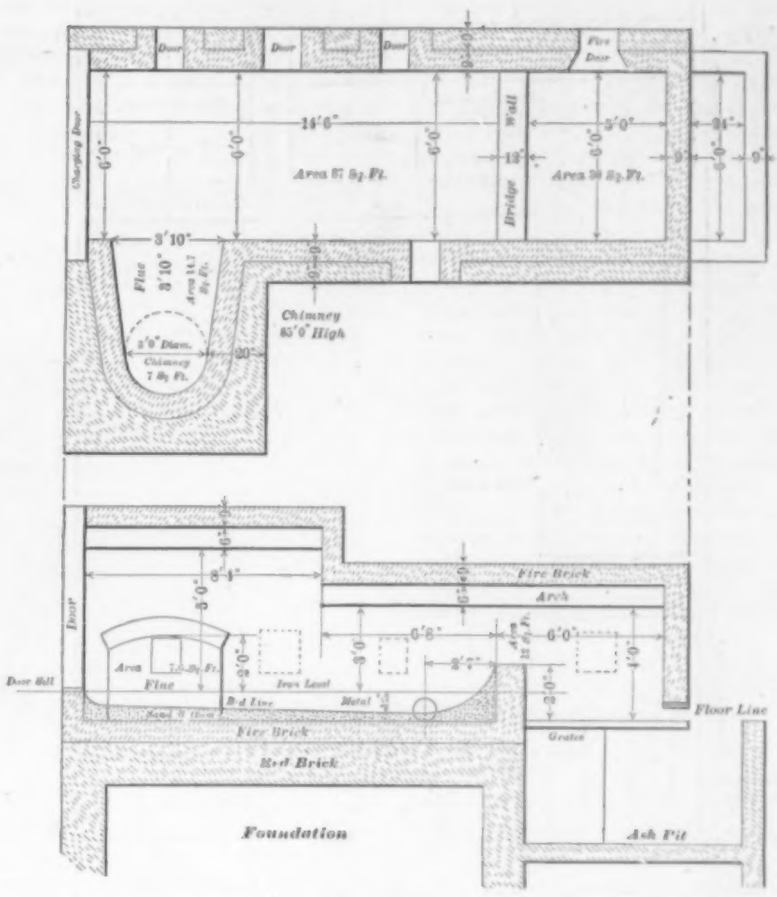


FIG. 9.—PITTSBURG TYPE AIR FURNACE; CAPACITY 22 TONS.

Pittsburg Type of Air Furnace.

The type of furnace shown in Fig. 9, in the heat of April 18, 1906 melted down sixteen tons of gun iron, with seven tons of Penn gas coal. The iron was seen to first melt one hour and fifteen minutes after starting the fire. The iron was melted "hot." When running this furnace to its full capacity, 22 tons, the ratio for fuel is quoted as 1 to 2.75. "We charge the heaviest iron at the middle of the furnace. Greatest burning out is found at the slag line and on the sides near the flue. Jersey fire sand and clay is used for patching."

"In a recent melt we determined losses in the following constituents:—silicon 0.17, manganese 0.18, carbon 0.035. The gains were:—sulphur increased 0.001 and phosphorus 0.014. The slight changes in sulphur and phosphorus may be due to error in chemical analysis.

FIG. 8.—THE CHARGING BAR.

Modified Type of Pittsburg Air Furnace.

The details of this furnace, Fig. 10, are based on average practice. The sand used for making the bottom is molding sand from the floor, which has been used and is put in from six to eight inches deep.

In charging the iron, half pig and half large scrap was used and melted down with select Youghiogheny coal at about the ratio of 1 to 3¾, in about seven hours. The first iron was seen to melt in about two hours after the fire was started. The metal is marked "medium" to "hot." Size of heat, fifteen tons. When the wind blows toward the open grate bars, the furnace works a little quicker. The greatest burning out, aside from the slag line

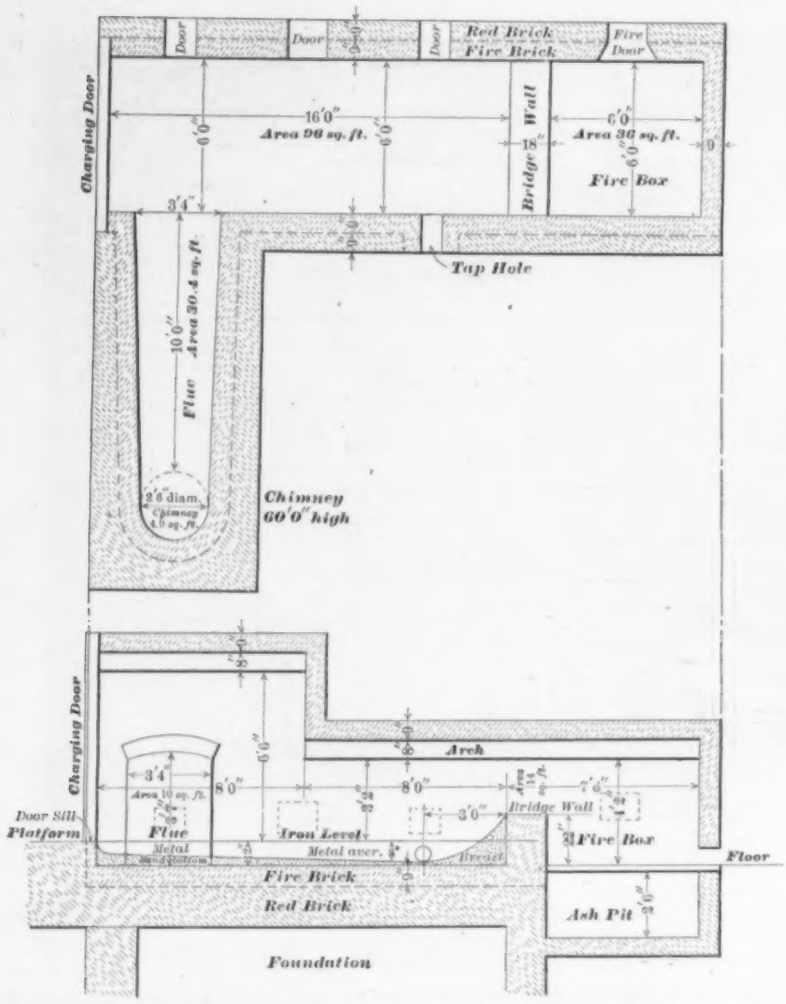


FIG. 10.—MODIFIED FITTSBURG TYPE AIR FURNACE; CAPACITY 15 TONS.

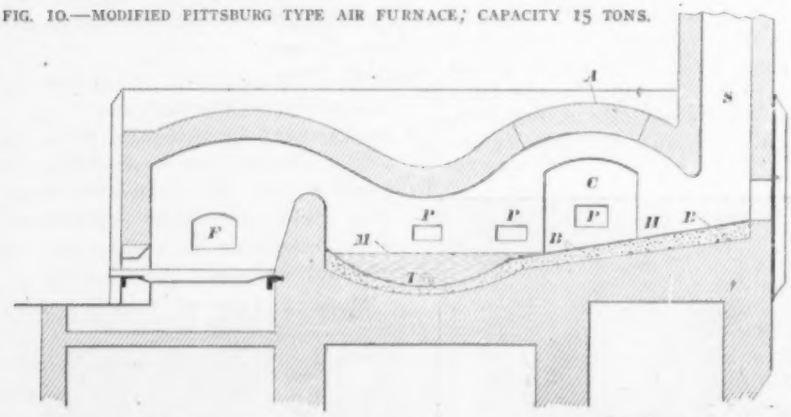


FIG. 11.—ENGLISH FURNACE.

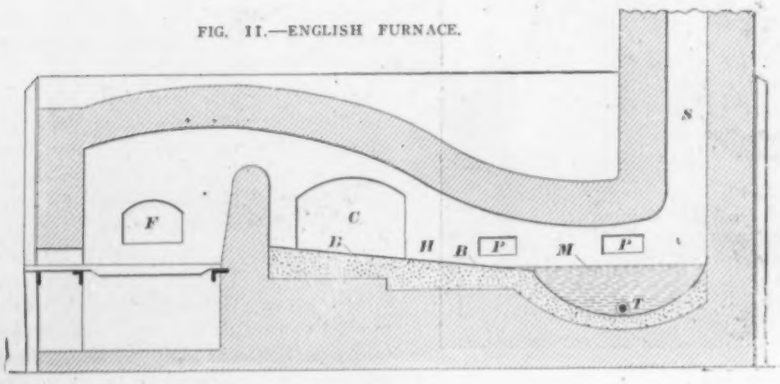


FIG. 12.—ENGLISH FURNACE.

is about the middle of the roof, half way between the bridge and the flue openings. For patching material, a mud made of one-half fire clay and one-half sand is used.

English Types.

The illustrations, Figs. 11 and 12, are presented to show the designs of furnaces more commonly used in England, as is derived from views shown in "Modern Iron Foundry Practice," published by D. Van Nostrand Co., Fig. 12 being given the preference.

While it appears good logic that the air necessary to support combustion should in passing through the fuel be directed as much as possible upon the metal lying on the bed by the curve of roof, still for all this such designs as Figs. 11 and 12 would seem to be better in theory than in practice, when contrasted with Figs. 3 and 4 and shows us there is a tendency to simplify the contour or curvature of the interior roof lines of furnaces.

It is unfortunate that there are no data for the working of furnaces Figs. 11 and 12, as these would be valuable in enabling us Americans to know where we stand with our English cousins in the question of economy in fuel and speed in melting.

From what information can be obtained on the question of grate surface areas used some years back, it appears that it was figured to be about equal to that of the chimney. With our modern furnaces it will be seen by noting the areas given on the illustration shown, that the present day practice is to have a very much larger grate area, than that of the chimney.

Many different kinds of fuels such as wood, coke and hard coal have been used, but the latter two create large quantities of fine ashes, that fall and cover the molten metal as to prevent the proper absorption of heat. The best kind of fuel is a fairly hard, gaseous, long flaming, non-coking, bituminous coal, that does not contain over one per cent of sulphur.

While there is much in preparing and charging a furnace that might be taken up here, this much can be said, that the operation of firing, to create and regulate a reducing or oxidizing flame, (the former being a heavy white flame, and the latter of a bluish cast similar to that which emanates from cupolas) is what requires the greatest care and skill on the part of the melter.

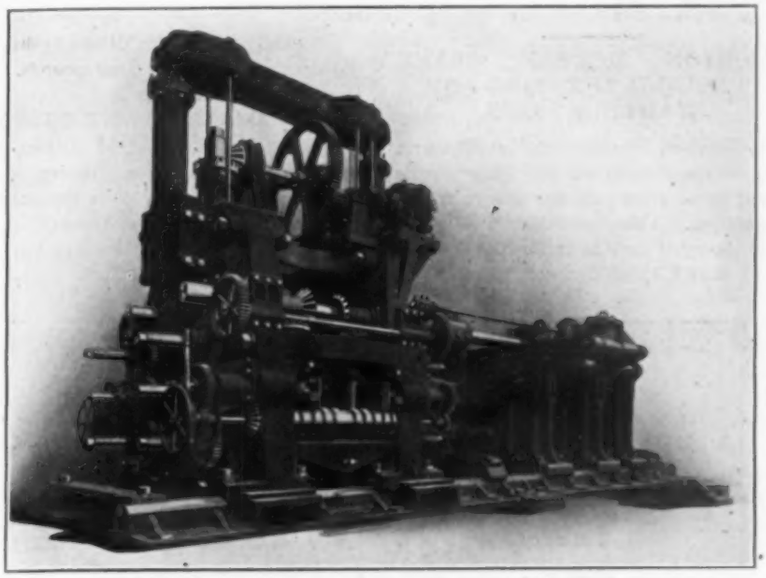
The C. S. Van Wagoner Mfg. Co., Cleveland, manufacturing hardware, has filed a deed of assignment, this action being prompted by an effort to collect $1,700 delinquent personal tax.

YOUNGSTOWN SHEET & TUBE CO.'S NEW UNIVERSAL MILL.

The accompanying illustration shows the Youngstown Sheet & Tube Co.'s new universal mill. This mill was designed and built by Mackintosh, Hemphill & Co., Pittsburg, who make a specialty of this class of work, having built most of the large universal mills in this country. The mill shown is of the two-high reversing type, and will roll universal plates varying in widths from 6 inches to 42 inches, or, by removing the vertical rolls, plates up to 66 inches may be rolled. In order to do this, a specially designed feed roller table is used to fill in the space generally occupied by the vertical rolls and their rest bars. The plates will be rolled from slabs, but provision has been made on the mill so that, should occasion arise, plates can be rolled direct from the ingot. The vertical rolls can easily be lifted out without disturbing the rest bars.

The top horizontal roll is balanced from above by means of hydraulic cylinders, attached to the tops of the housings. With this arrangement, the working parts are removed from underneath the mill, where they are subject to injury through scale and dirt, and a much more solid foundation can be used. These cylinders, in conunction with a specially constructed buggy, made to pass through the windows of the housings, are also used for changing the horizontal rolls, thus reducing the time required for this operation to a minimum. This arrangement is patented by the builders of the mill.

The vertical roll pull-backs are also hydraulic cylinders placed horizontally in the roll housings between the vertical roll screws. All cylinders are outside packed.



NEW UNIVERSAL MILL FOR YOUNGSTOWN SHEET & TUBE CO.

It will be noticed that the screws for both the horizontal and vertical rolls are operated by electric motors, the motor for the horizontal screws being placed on the top of one of the roll housings. There are two motors for operating screws for the vertical rolls, thus giving independent adjustment; these motors are mounted between the pinion housing caps. All the motors are operated by controllers on the roller's platform.

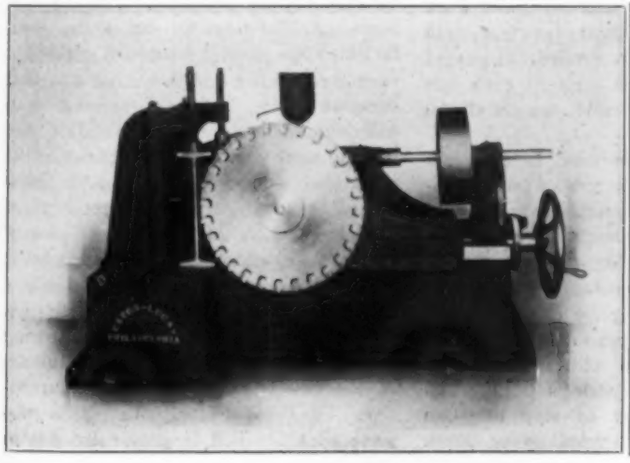
The side guards for guiding the piece as it leaves the rolls can be operated either simultaneously or independently, as may be desired. The whole mill is of a substantial and simple construction, with large wearing surfaces throughout.

The mill tables, which are not shown in the illustration, each contain nineteen rollers 14 inches diameters, all driven. In order that short pieces can be handled, these rollers are placed close together. This necessitated a side shaft being used on either side of the tables, the rollers being driven from alternate sides.

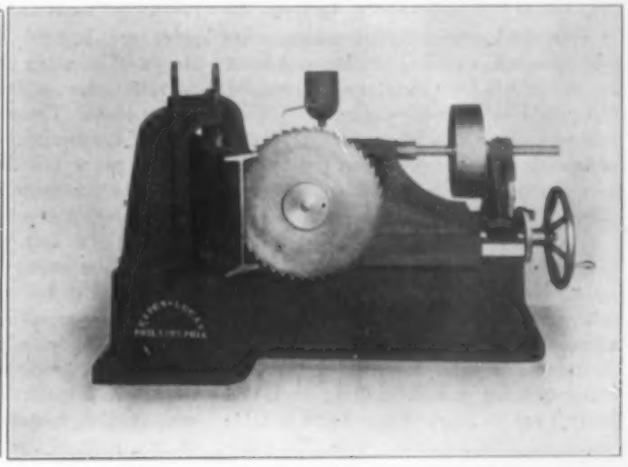
Messrs. S. V. Huber & Co., of the Ferguson bldg., Pittsburg, are the consulting engineers for this mill.

COLD SAW CUTTING OFF MACHINE FOR I-BEAMS.

The accompanying illustration shows a cold saw cutting off machine for structural iron work, with a capacity for sawing 20-inch I-beams. This machine is built by the Espen-Lucas Machine Works, Philadelphia, and is very similar to the machine of similar character built by this company and described in THE IRON TRADE REVIEW of June 7, 1906. The machine is shown with both a high speed steel inserted tooth saw blade and with a solid plate high speed steel saw blade. It is powerfully geared to drive these blades to the limit of their capacity. The machine is driven by a hardened crucible steel worm and phosphor bronze worm wheel, through heavy gears cut from a



ESPEN LUCAS COLD SAW, WITH INSERTED TOOTH BLADE.



ESPEN LUCAS COLD SAW WITH HIGH SPEED STEEL PLATE BLADE.

solid crucible steel forging. The feed is variable and automatic and can be increased or decreased at the will of the operator while the machine is in motion. An automatic stop may be set to throw out the feed at any desired depth of cut. The floor space occupied is 80 by 40 inches, and the weight 7,000 pounds.

In Fig. 1, the machine is shown with the swiveled clamps in position for making a straight cut. Fig. 2 shows the swiveled clamps reversed for sawing the beam at an angle of 45 degrees.

THE "YANKEE" POWER PRESS.

The accompanying illustration shows the "Yankee" press, which is manufactured by the Manville Bros. Co., Waterbury, Conn. This is a power press, designed for foot press work, and can be used for all kinds of light blanking, clipping, piercing, forming, closing and light embossing. It is a very handy press for electrical work.

THE YANKEE PRESS.

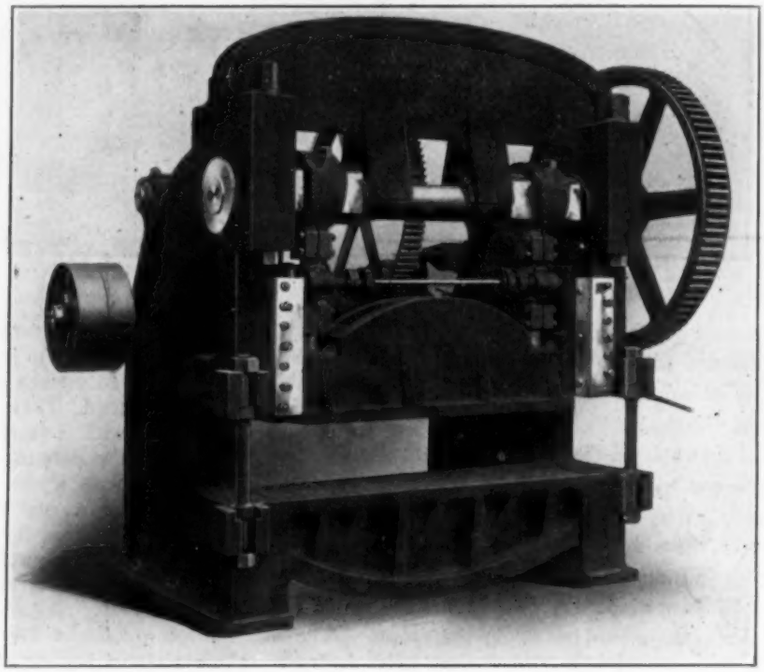
The machine has an eccentric adjustment to govern the position of the slide. It is provided with a combination stop clutch, which is so arranged as to render a second revolution impossible without raising the foot. This renders hand feeding safe, and gives freedom to the operator. By throwing out the trip, a continuous motion is obtained, so long as the treadle is held down.

The machine is built in three sizes, and is arranged to work either upon a table furnished for it, or on a bench. The principal dimensions of the large and small sizes are shown in the following table:

Weight with table, pounds..	270	550
Weight without table, pounds	150	360
Stroke, inches	1	2
Bed to slide when down, in..	4 3-16	7
Center of slide to upright, inches	2½	4½
Opening through uprights, inches	3½	4½
Size of bed, inches.....	5 x 9½	3¼ x 13
Opening in bed, inches....	2	3
Size of wheel, inches....	10 x 2¼	15 x 2½
Weight of wheel, inches....	35	55

GARRISON DOUBLE CRANK PUNCHING, SHEARING AND STAMPING PRESS.

A. Garrison Foundry Co., of Pittsburg, Pa., is the builder of the large double crank press shown in the accompanying illustration. This machine was specially designed and built for the Pressed Steel Pole Co., at Mount Pleasure, Pa., telegraph poles. It will bend angles from plates ⅜ inch and lighter. The long poles are pressed about ten feet each stroke. The plates are carried and gauged on roll tables 40 feet long on each side of the press. These tables are not shown in the illustration.



GARRISON DOUBLE CRANK PUNCHING AND SHEARING PRESS.

This press is also used as a corner break for the manufacture of heavy window frame, pressed steel car trucks and bolsters. In fact, anything within the limit of the press, hot or cold, can be arranged for heavy shearing or gauge punching by removing the stay rods. The machine is double geared, 30 to 1 and the slide is provided with worm adjustment. A friction clutch is used which enables the operator to stop the ram at any part of the stroke, up or down.

These machines are built in several different styles and sizes, ranging from 500 pounds to 200,000 pounds in weight for all classes of work.

The dimensions of the machine are as follows:

Width between uprights, 96 inches.

Distance back from center of slide, 14 inches.

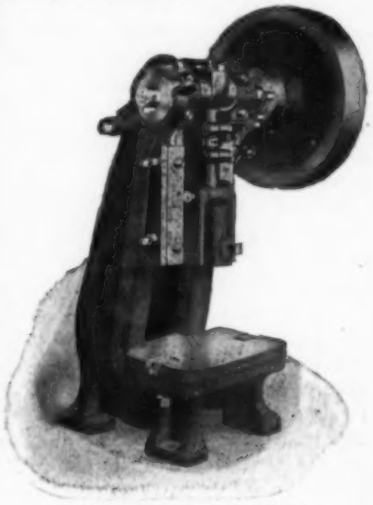
Distance, bed to slide, all up, 20 inches.

Weight of machine, 82,000 pounds.

BLISS SMALL POWER PRESS.

The E. W. Bliss Co., 8 Adams St., Brooklyn, N. Y., has designed a small power press, shown in the accompanying ilustration, to do the work which was formerly done on foot presses. It is particularly adapted for light work, and is used in the manufacture of burners and for small hole punching, blanking and forming. The total weight of the press is only 250 pounds, but attention has been given to the design, so that a strong, compact frame has been secured with sufficient die space to accommodate dies of quite some size. The general lines of the press are similar to the regular Bliss inclinable presses, although slight changes have been made, due to the small size of the machine. A split sleeve connection is used on the press, the sleeve having a right and left hand thread. The adjustment is made by turning the adjusting screw, which is securely locked by means of the two bolts shown in the illustration. The press is fitted with a Bliss two-piece clutch, which is practically instantaneous in its action. The fly wheel

is bronze bushed, and has a solid web. The presses are made in large quantities, jigs and gauges being used, so that every piece is interchangeable, at the same time, enabling the machine to be built at the lowest possible cost.



SMALL BLISS POWER PRESS.

The principal dimensions are given in the following table:

Opening in bed, diameter	3 inches.
Distance back from center of slide	3 inches.
Width of opening in back	4 inches.
Distance, bed to slide, stroke down and adjustment up	5 inches.
Stroke of slide	1 inch.
Balance wheel, diameter	13 inches.
Balance wheel, face	2¼ inches.
Balance wheel weight	50 pounds.
Speed	150 to 200 revolutions.
Area of top of bolster plate	6 x 9 inches.
Height to center of shaft	20¼ inches.
Bench space over all	16 x 16 inches.

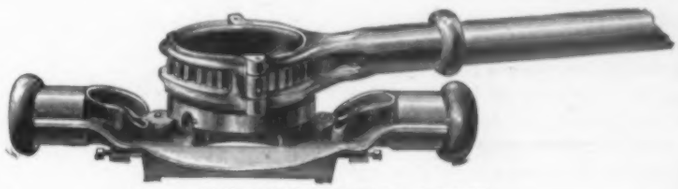
RIDDING CITY OF SMOKE.

The Schoenberger plant of the American Steel & Wire Co. is being equipped with mechanical stokers. C. L. Miller, president and general manager of the plant, says in this connection: "We hope they will aid in eliminating at least a good proportion of the smoke now produced and if they do so we shall consider the money wisely applied. We are willing to do our share in ridding the city of the smoke nuisance. However, I do not believe that all of the smoke now produced throughout the city can be averted, but I also believe that a considerable proportion can be avoided. Our entire 7,000 horsepower boiler plant is being equipped with mechanical stokers which have been thoroughly investigated, and we believe that they will do the desired work. Some time ago we installed smoke-consuming devices that failed of their purpose, but we hope for better success this time."

A RACHET ATTACHMENT FOR DIE STOCKS.

The Armstrong Mfg. Co., Bridgeport, Conn., has recently placed on the market a ratchet attachment for die stocks shown in the accompanying illustration. The frequent necessity for doing pipe work and for making alterations and repairs to piping in close and cramped quarters has brought several ratchet stocks on the market. The great majority of these require that the buyers purchase a complete stock in order to avail themselves of the ratchet. The above company, however, makes ratchet attachments fitting the various sizes of stocks made by it, and which can be easily attached or removed from the stock by removing a thumb screw. This arrangement allows the pipe-fitter to use the regular stock on ordinary work and have only the added weight of the ratchet in cases where it is necessary to thread the pipe in confined space.

The Armstrong ratchet consists of a light, malleable iron ring carrying the ratchet and pawl, and which is slipped over the barrel of the stock and securely attached to it by a thumb screw. No extra handle is provided, as the extension is tapped to receive one of the stock handles. The ratchet may be adjusted for turning the stock in either direction. This tool has proved of great service to pipe-fitters, enabling them to use regular stocks for threading pipe in positions where they would otherwise have to take down the pipe.



ARMSTRONG RATCHET DIE STOCK.

Blow at Metric System.—The Manchester, Eng., Chamber of Commerce has adopted a resolution to the effect that while continuing to support the enforced adoption of the metric system for general purposes, it will always maintain, in any future action taken in the support of legislation to bring this about, that the cotton-yarn trade and the engineering trades ought to be expressly exempt from such legislation.

Morgan's New Record.—The steel steamer J. Jierpont Morgan, of the Pittsburg Steamship Co.'s fleet, last week established a new record for ore cargoes from Lake Superior, by taking up a cargo of 11,158 tons at Two Harbors. The former record cargo for Lake Superior was 10,629 tons loaded at Ashland last summer. The Morgan also holds the record for Lake Michigan, having carried a cargo of 13,163 tons from Escanaba to South Chicago recently.

GERMANY

ENTERS BRITISH MARKET AS STEEL BUYER.

Strange Reversal of Conditions. —Wage Regulation in Midlands.

Birmingham, Eng., June 23.—The Midland iron trade is once more in possession of a scale for the regulation of wages. The preliminaries once through, the final stage was reached rather suddenly. Last Thursday, rather to the surprise of most people, the Standing Committee of the Midland Iron and Steel Wages Board, under the chairmanship of George MacPherson, adopted the scale at a single sitting, on a report from the special committee. As the Standing Committee has decisive powers, no full meeting of the board will be necessary, and there is nothing to prevent the committee at once declaring that the scale will govern wages. The adoption is in a way an achievement on the part of the men, as their formulas have been adopted entirely. These were indicated in a previous letter, the main features being an increase of the premium from 1s 6d to 2s, and the certain operation of the scale for two years. The ironmasters do not relish the higher premium, but the difference is more imaginary than real, as the scale will simply give the present rate of wages. As a principle both sides have subscribed to a declaration that Midland wages should be sixpence higher than the north, in lieu of northern extras. On the whole, the new wage regulator looks like a popular instrument, while the manner of its adoption shows once more how excellent are the relations between employer and employed in the Midland iron trade.

Germany Buying Steel.

The trade is a curious study just now, exhibiting some rather perplexing anomalies. Cleveland shipments of pig iron have lately beaten records; yet, in the Midlands prices tend steadily downwards, a state of things which is puzzling not a little both buyers and sellers. Another strange development is the appearance of Germany on the market as a buyer, not only of iron, but of steel, and especially of billets. A couple of years ago, practically all the billets used in Midland sheet-making came from Germany. The most experienced traders are baffled by a state of things in which all precedents seem to

be discarded. The sheet trade in the Midlands is rather better, but in spite of the general prosperity, all other branches are on the down grade. Steel, by contrast, shows wonderful buoyancy and animation.

More evidence is forthcoming of the splendid position of the rolling stock trade. The Caledonian Railway Co. has just placed an order for a thousand wagons, each with a carrying capacity of 13 tons of coal or 16 tons of pig iron. They must all be delivered by the end of August. Of these the Metropolitan Amalgamated Railway Carriage & Wagon Co., Birmingham, builds 400, R. Y. Pickering & Co., Wishaw, 300, and Hurst, Nelson & Co., Motherwell, S. J. Claye, Longeaton, and the Motherwell Wagon & Rolling Stock Co., each builds 100.

Chain Trade Sensation.

There has been a curious incident in connection with the Black Country chain trade. At about a fortnight ago, six operatives in the cable chain department left the Black country to obtain employment with a German manufacturer who had lately visited the district. The men were paid high wages; but there was some local anxiety at Cradley over their departure, the belief being that this was a German attempt to capture this important industry, the Germans, it is said, being unable to make chains to satisfy their best customers. In certain quarters, the idea is scouted that there should be any secret in connection with the trade, but the undoubted fact is that Mr. Sitch, the local secretary of the Men's Association, accompanied by one of the leading employers, paid a couple of visits to Germany, with the result that the men have all been induced to come back, and good situations have been found for them. So far, it would seem that foreign competition has not materially affected the important position of the district as producers of cable chains.

Recently issued reports show our leading companies to be in a very fine position. John Brown & Co., of the Atlas Works, Sheffield, have made profits amounting to £223,800, an increase of £5,300, justifying a dividend of 10 per cent. They propose also to spend £40,000 in extensions and alterations during the present year. The Ebbw Vale Steel, Iron & Coal Co. has a balance of £70,341. Of this, it writes off £27,234 in respect of enlargements and extensions, part of which consists in the replacing of the Bessemer shop by a new plant. The Tredegar Iron & Coal Co. has a profit of £89,703, and a divisible balance of £91,057. It pays £20,000 each in reduction of capital and to reserve, and carries forward rather over £1,000. Messrs. Cammell, Laird & Co. have just obtained authority for a large issue of stock to meet the expenditure on the new armor plate mill, the plant for the manufacture of shell, and other extensions. It is evident that the great establishments really favorably situated for business are going forward by leaps and bounds.

Tribute to Sir David Dale.

The will of Sir David Dale has just been proved at £121,831, and the extensive list of his associations shows how really great a captain of industry he was. This is the official list: In addition to being one of the founders and past presidents of the Iron and Steel Institute, he was chairman of the Consett Iron Co., Ltd., and connected with the Consett Spanish Ore Co. (Ltd.), the Dunderland Iron Ore Co. (Ltd.), Orconera Iron Ore Co. (Ltd.), Pease & Partners (Ltd.), the Weardale & Consett Water Co. (Ltd.), Wilson, Pease & Co. (Ltd.), and a director of the Barrow Hematite Steel Co. (Ltd.), the North-Eastern Railway Co., the Cockermouth, Keswick & Penrith Railway Co., the Forth Bridge Railway Co., and owners of the Middlesborough Estate (Ltd.).

The last issue of the *Ironworkers' Journal* contains a remarkable tribute from the pen of James Cox, J. P., the general secretary of the Men's Association, under the head of "Sir David Dale, the Peacemaker." Mr. Cox says, referring to the early history of the Northern Board: "Fortunately, Sir David Dale was for the first few years the chairman, and to go through the records of those earlier years reveals a tact, a syympathetic knowledge of human nature, a readiness with that 'soft answer which turneth away wrath', a happy combination of firmness and suavity such as has rarely been equaled. The great power and charm of Sir David Dale lay in the fact that one could never come into close personal contact with him without being convinced of his strong sense of right, of reason, and judicial impartiality. . . . It is no small testimony to the general esteem and respect in which Sir David was held throughout the iron and steel districts of this country that I have already received a large number of communications from all classes of workmen expressing their deep regret at his sudden and unexpected demise."

Methodist denominations have always included a remarkable proportion of ironmasters. A further evidence of their prominence is found in the fact that a big bazaar now being held in Birmingham to raise £10,000 for the Central Mission has for its chairman on one day Ebenezer Parkes, M. P., one of our biggest ironmasters, and for its opener on another day Lieut. Col. James Patchett, the head of the Shropshire Iron Co. Other ironmasters taking a prominent part are John Bayley Lees and John I. Parkes, both heads of very large local firms.

HEAVY RAINS

Delay Ore Movement, But There is Great Activity on the Docks.

(Staff Correspondence.)

OFFICE OF *The Iron Trade Review*, Duluth, June 30.

The weather during the past week has been extremely improved for the rapid shipment of ore both on land and water. It has rained until the mining sections are loaded with water though not to the point of flooding the mines and the upper lakes have been obscured by the heaviest fogs ever experienced so late in the year, so that navigation has not only been retarded but attended with much damage and danger to vessels. On Thursday last, two inches of rain fell inside of two hours at the Two Harbors docks. This condition is continuing to detract materially from the extent of the increase of shipments over last year, yet, while the tonnage so far is not up to the average necessary to produce the expected season output, the past week has seen some excellent work done at both the Missabe and Two Harbors docks. At the latter place it is expected that by July 1, shipments will be well caught up, but it has been an uphill fight continuously. The boat situation in addition is not of the best. In the middle part of the past week the shortage of boats was such that, with the pockets all fairly well filled, there were some 1,200 loaded cars waiting at the docks for carriers. It was anticipated that by the morning of the first enough cargos would be taken to bring conditions back to normal. This situation has been repeated at intervals, with the foggy weather and the fact that many docks on the lower lakes do not work to full capacity on Sunday largely to blame.

While the Duluth & Iron Range railroad has had considerable trouble owing to bad ground conditions in completing the seven mile stretch of track that it is building up near the mines, when that is finished in the near future, there will be seventy-five miles of double track available to the largest shipping properties. In the matter of cars the road is in perhaps the best shape of any on the range. The Duluth, Missabe & Northern is steadily improving, but the Great Northern is still badly handicapped. Of the order given by the Great Northern to the American Car & Foundry Co., St. Louis, for 1,050 steel cars, 350 were to have been delivered on April 1, and 350 more on May 1. Not one of these has been delivered to date, the impossibility of obtaining steel and shapes being assigned as the cause of

the delay. It is confidently believed, however, that 300 will be received by July 15, followed by consignments each day that will see the order filled inside of two months.

The new loading dock which is being added to the coal dock of the D. & I. R. railroad at Two Harbors is to have a capacity of 3,000 tons and is nearly completed. Upon the completion of the new electrical power station which is now building but will not be finished ready for running until Oct. 1, the dock will be operated by electricity and will be novel in its operation in that the coal will be conveyed directly from the boats into the loading dock alongside of the railroad. The electric power plant is now located under the dock office in the center of the docks and is cramped, inconvenient and inadequate, as power is to be furnished not only to the adjacent railroad shops for their operations but also to the docks. A fine concrete and brick building is being erected beween the ore docks and the roundhouse and the present electrical equipment will be transferred there.

According to a reliable authority the mines of the Jones & Laughlin Steel Co. on the Mesabi will ship close to 1,000,000 tons this year contrasted with a little less than 500,000 last season. Although the Biwabik has had predicted for it a shipment this year of greater tonnage than last when it produced 1,092,987 tons, it has been stated up here on good authority that the output will not be more than 800,000 tons this season. The Sellwood properties also will not, it is thought, ship more this season than they did a year ago.

A disposition to buy outright or sublease lands on both the Mesabi and Vermillion ranges was quite in evidence during the past week and the Cuyuna range is also being quietly looked over by a number of interests and though sales of considerable tracts of land seem imminent, the general feeling is one of marked skepticism as to the value of the deposits for some time to come.

Extended and warmly contested litigation to determine the rights of possession of the Clark and Leonard mines has been begun in the district court during the past week and bids fair to concern large interests. Heirs of James M. Rogers are seeking to regain the above properties on the grounds that their shares were fraudulently disposed of to the Clark Mining Co. Taking of testimony is involving some of the most prominent mining men in the city and much interest will be developed.

T. H. Cornell, who is to open the new general offices of the Republic Iron & Steel Co. in this city is expected to reach Duluth tomorrow.

HEAVY EQUIPMENT ORDERS BY STEEL CORPORATION.

Details are announced of the order recently placed by the United States Steel Corporation with the Allis-Chalmers Co., for the electrical power station equipment at the Gary, Ind., plant, as noted in THE IRON TRADE REVIEW of June 28.

Orders for gas-electric generating units recently placed with Allis-Chalmers Co., comprise 15,000 horsepower to be furnished for the Illinois Steel Co., 4,000 horsepower for the Homestead plant of the Carnegie Steel Co. and 35,000 horsepower for the Indiana Steel Co. Each unit is of 2,000 kilowatts capacity. It consists of a horizontal twin-tandem Allis-Chalmers gas engine, direct connected to an Allis-Chalmers generator. All of the generators, except two, are designed for alternating current, 25 cycles, three phase.

In addition to these electrical units the Allis-Chalmers Co. is building equally large gas blowing engines for the United States Steel Corporation, four of which are to be installed in the Homestead plant. Of the remaining engines purchased for this purpose, which are to be constructed by other companies, all will be built under a license from Allis-Chalmers Co., owner of the Slick patents covering the blowing "tube" adopted for these machines. Each blowing engine has a capacity of 3,500 horsepower, and will deliver 30,000 cubic feet of free air per minute against a pressure of 18 pounds per square inch which is ordinarily the maximum, but it is so designed and proportioned that it can be operated at any pressure up to 30 pounds.

Gas engines thus far purchased from Allis-Chalmers Co. by the United States Steel Corporation, will have an aggregate normal capacity of 68,000 horsepower, and represent a value of over $2,000,000. Of this amount more than half is covered by one contract, making it the largest single order ever placed, in this country or abroad, for gas engines to be used either in blast furnaces for blowing purposes or as prime movers for electric generators.

The international convention of smoke inspectors was in session last week at Detroit. The subject of smoke prevention was thoroughly discussed and a number of Detroit plants were visited.

OUR GROWING FOREIGN COMMERCE.

Exports of manufactures from the United States in May, 1906, were larger than in any preceding month in the history of our export trade, aggregating over $56,000,000, an average of more than $2,000,000 for each business day of the month. This is the showing made by the returns received in the bureau of statistics of the department of commerce and labor. For the eleven months ending with May exports of manufactures aggregated $551,000,000, an average of nearly $2,000,000 for each business day of the eleven months. For the month of May alone they are $8,000,000 in excess of those for May of the preceding year, and for the 11 months aggregate $58,000,000 more than in the corresponding months of the preceding year. These figures seem to justify the prediction that the total exports of manufactures for the fiscal year just ended will aggregate about $600,000,000, against $543,000,000 in 1905. The increase, which is about $50,000,000, is largely due to the exploitation of iron and steel manufactures.

Total exports of iron, steel and their manufactured products in May, 1906, were valued at $15,686,322 against $12,118,696 in May, 1905. For the eleven months, the total value was $146,900,582 against $122,907,266, for the corresponding period a year earlier. Contributing most largely to their increase were bar iron, billets, ingots and blooms, sheets, plates, structural materials, rods, hardware, machinery of all kinds, locomotives and rails. As will be seen, the increased exports were general, only a few lines showing a decrease for the eleven months ending with May, 1906. Prominent among these were scrap, steel bars and steel rails, the latter due to recently inaugurated tariff impositions by British North America, which had afforded a large market.

Imports of manufacturers' materials also show a marked growth during the year. They aggregated $53,000,000 for May, 1906, against $45,000,000 for May of last year, and during the eleven months ending with May, 1906, were $541,000,000 against $483,000,000 in the corresponding period of the preceding year. This growth in the importation of manufacturers' materials is quite as strongly marked as that in exports of manufacturers. For the twelve months ending with June the total value of manufacturers' materials imported seems likely to aggregate approximately $590,000,000, or nearly as much as the value of manufactures exported. The extent to which the pres-

ent iron and steel industry is taxing the country's producing powers in raw materials is evident in the heavily increased imports of iron ore, pig iron, scrap, iron and steel bars and crude steel. Structural imports also increased heavily in the eleven months as compared with the eleven months ending in May, 1905. Excluding ore, the total for the period just closed in all iron, steel and manufactured products was $26,156,365 against $20,863,906 for the corresponding period a year previous.

LARGE RAILROAD CONTRACTS.

Toronto, Canada, June 28.—The Canadian government has awarded contracts for steel rails and fastenings for two sections of the National Transcontinental (Grand Trunk Pacific) railway, amounting in all to $2,488,450. The total quantity of steel rails included in these orders is 65,000 tons, which were awarded as follows: Dominion Iron & Steel Co., 23,000 tons at $34 for Quebec delivery, and 10,000 at $34.50 for Port Arthur delivery by Aug. 1, 1906; Algoma Steel Co., 32,000 tons at $34 for Port Arthur delivery, 10,000 by Nov., 1906, and the remainder, 22,000 tons, by June 1, 1907.

Other contracts for material awarded were: Splice bars, Quebec delivery, Novia Scotia Steel & Coal Co.; 1,317 tons at $.47 per ton, Fort William delivery Hamilton Steel & Iron Co., 2,241 tons at $43.68.

Bolts.—Quebec delivey, Montreal rolling mills, 2,235 lbs. at $3.57½ per 100 lbs.; Gananoque Bolt Co., 1,072 lbs. at $3.41 per 100 lbs., for Fort William delivery, Montreal rolling mills 202,800 lbs. at $3.65; Toronto Bolt & Forging Co., 202,800 lbs. at $3.60; Gananoque Bolt Co., 202,800 lbs. at $3.44.

Spikes.—Quebec delivery, Peck rolling mills, 1,188,200 lbs. at $2.50 per 100 lbs.; Fort William delivery, Montreal rolling mills, 728,900 lbs. at $2.55; Toronto Bolt & Forging Co., 728,900 lbs., at $2.55; and Hamilton Steel & Iron Co., 729,000 at $2.55.

The Dominion Iron & Steel Co. has secured a contract from Mackenzie & Mann for 55,000 tons of 60-pound steel rails for use on the Canadian Northern railway system.

COPPER OUTPUT INCREASES.

The value of the copper produced in the United States in 1905 was $137,498,727, as compared with $105,629,845 in 1904. The product of 1905 was much the largest ever recorded in the United States. Exports of copper to Germany, Holland, and other countries continue to increase. During the month of May 11,072,320 pounds were shipped to Germany, as compared with 6,381,340 pounds in April. Exports to Holland were 14,197,120 pounds in May, an increase of over 1,000,000 pounds as compared with the preceding month. France took 6,948,480 pounds and the United Kingdom 5,125,120 pounds, being a considerable increase over the previous month's shipments. The Michigan mines produced 20,000,000 pounds of refined copper in May, which sold for approximately $3,760,000. That was the largest output secured in any month since copper was first mined in the Lake Superior region. It indicates an annual production of 240,000,000 pounds, but an even larger product is expected as a result of preparations made by the mine owners to handle a greater output.

GOVERNMENT WORK HAS AIDED IRON INDUSTRY.

The proposal of Chairman Theodore E. Burton, of the river and harbor committee, to increase more than three-fold the expenditures on navigable rivers, says the *Wall Street Journal*, gives an opportunity to review the policy of congress in this branch of its business administration. The river and harbor appropriations now amount to about twenty million dollars a year. This is spent mostly on the harbors of the ocean coasts and the lakes. It has been the policy of congress for some years to make no improvements of a merely local character, on streams, harbors or channels, but to concentrate the outlay chiefly on the large harbors where lines of traffic meet and where the growing volume of trade justifies it.

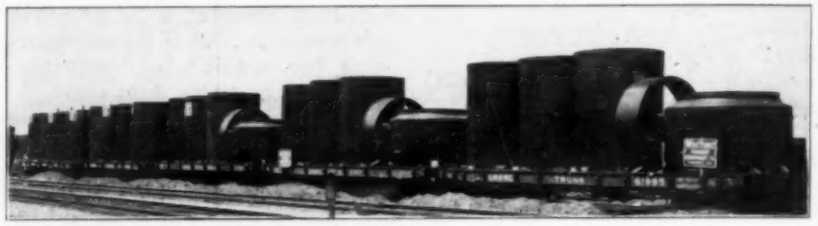
The most striking evidence of this policy is to be found on the lakes, where the enormous traffic in the raw materials of industry is handled on a colossal scale, only because of deeper harbors and deeper and wider canals. This has been one of the cardinal factors in causing the center of the American iron and steel industry to locate west of the Alleghenies. The strides which this industry has made in the past twenty-five years have depended more on iron ore than on any other single thing, except the genius of the workmen; and the lakes, with roadsteads deepening with the requirements of commerce and industry, are the key to the ascendency of the United States among the iron-making powers of the earth.

A LARGE CUPOLA SHIPMENT.

The accompanying illustration shows a notable shipment of cupolas made June 1 by the Whiting Foundry Equipment Co., located at Harvey, Ill., a suburb of Chicago. It consisted of three No. 9½ Whiting cupolas for the Utica Pipe & Foundry Co., Utica, N. Y., routed via Grand Trunk and Delaware & Lackawanna railroads.

The Whiting company is making a number of important extensions to its plant, the improvements comprising a new pattern shop 94 x 44 feet, and an addition 130 x 52 feet to the machine shops. The latter will give additional shipping facilities permitting more tracks to cut through the plant and facilitating the loading of cranes and other equipment of heavy capacities.

The firm has recently closed a number of large contracts, among others that might be mentioned, that of the Chicago, Milwaukee & St. Paul Railroad Co., West Milwaukee, Wis., equipment for wheel foundry of 600 wheels per day capacity; American Steel Foundries, St. Louis, Mo., large amount of foundry equipment



A SHIPMENT OF WHITING CUPOLAS.

BETHLEHEM STEEL CHANGES.

A reorganization of the official staff of the Bethlehem Steel Co., was made during the week, when Archibald Johnstone, formerly general superintendent, was elected president to succeed E. L. McIlvain. The latter some time ago signified his intention of resigning and this action was taken on the return of Mr. Schwab from abroad. H. S. Snyder, formerly secretary and treasurer, was made vice president to succeed A. E. Borie, who resigned, and B. H. Jones, who has been auditor and superintendent of accounts, was made secretary and treasurer. E. G. Grace succeeds Mr. Johnstone as general superintendent. The balance sheet of the corporation and its subsidiary companies as of Dec. 31, 1905, has been made public. It shows assets of $22,288,458, in which the principal items are plant and construction $11,761,230, inventories $4,435,915, accounts receivable $4,087,849 and cash $1,237,661. A surplus of $10,906,747 is the heaviest item in the list of liabilities.

OFFICIAL CHANGES MADE.

American Car & Foundry Co. Holds Annual Meeting.—Prosperous Report.

The annual report of the American Car & Foundry Co. was presented at the stockholders' meeting last Thursday. Compared with the 1905 report it is as follows:

	1906	1905.
Total earnings	5,648,553	3,754,274
Ren. Rep. Etc	1,490,103	818,789
Net	$4,158,450	$2,935,485
Renew constr. chgd. off	350,790	307,367
Bal. for divs.	$3,807,660	$2,628,118
Pfd. divs.	2,450,000	2,100,000
Com. divs		
Surplus	$1,357,660	$528,118
Prev. sur.	12,755,434	12,227,316
Total sur	$14,113,094	$12,755,434

The total earnings compare with $5,585,879 in 1904 and $8,447,030 in 1903. The net surplus for the year, $1,357,660 is equal to 4.52 per cent earned on the 30,000 common stock. The common dividend recently declared does not show in this report, as it is for payment later.

The general balance sheet of the company lists property at $59,371,979, stocks and bonds of other concerns $1,280,888, materials on hand $19,154,118, accounts and notes receivable $12,658,799, cash, $1,985,646, total $94,451,430 as compared with $83,506,269 in 1905. Both the items materials on hand $19,154,118, accounts able have increased heavily. The company's gross business for the year was $69,040,638.

At the annual meeting of stockholders President Eaton stated that during the year ending April 30, 1906, the company manufactured a total of 74,323 cars. Of this number 73,540 were freight cars and 783 passenger cars. Of the freight cars 38,239 were of wood construction and 34,518 of steel construction. Of the passenger cars 564 were of wood construction and 219 were of steel construction. The company also produced 940,551 car wheels. During the year ending April 30, 1905, the company produced only 35,857 cars of all kinds.

President Eaton also stated that at the beginning of the new fiscal year the company had on hand orders for 71,369 cars of all descriptions. On the corresponding date last year the company's total orders on hand were for 44,000 cars.

April 30, 1906, the company was employing 23,807 men in its various plants. The number of the company's preferred stockholders at that time was 5,234 and of its common stockholders 1,814.

All of the old directors were re-elected with the exception of J. L. Smyser, whose place on the board is taken by C. R. Woodin. William K. Bixby, however, resigned as chairman of the executive committee, and the office was discontinued. Mr. Bixby remains a director of the company and the duties formerly devolving upon him will be performed in the future by F. H. Eaton, who was re-elected president. The members of the company's executive committee are now: President Eaton, C. R. Woodin, and H. R. Duvall. J. M. Buick, formerly auditor, was elected fourth vice president. N. A. Doyle, formerly assistant auditor, was elected auditor, and W. J. Simmins was elected assistant auditor.

DOMINION STEEL COMPANY SEEKS BOUNTY EXTENSION.

The annual report of the Dominion Iron & Steel Co. for the fiscal year ending May 31, shows a surplus of $652,549 after the payment of all interest charges and sinking fund provisions on the first mortgage bonds. The profit and loss account for the year follows:

Profit on sales	$1,396,569.84
Rents, etc	9,735.94
Total net income	1,406,304.78
Interest account	694,531.84
	711,772.94
Sinking fund	59,179.18
Surplus	652,593.76
Previous surplus	1,021,709.00
Total surplus	$1,674,302.76

The statement accompanying the financial report is in part as follows: "Your directors have applied to the government for an extension of the bounties. They feel that the company has strong claims for consideration on at least two grounds—first, that the time required to establish this industry, an industry entirely new to Canada, and in a district remote from any industrial center, has been much prolonged by unexpected delays and difficulties, so that the company is not in the assured position which it was expected would be reached before the expiration of the bounties; and, secondly, that owing to these delays and difficulties the company has received, and the government has been called on to pay, much less in the way of bounties than at the outset it was expected would be paid to bring about the establishment of this industry.

"Your directors are hopeful that before long the Canadian mills will be able to manufacture the wire which is now imported, and thereby provide a market for our full production of rods. The bounties on our pig iron and steel ingots will, on July 1 next, be reduced to 70 cents and $1.05 per ton, respectively, and unless extended they will cease altogether on June 30, 1907. We derived from these bounties during the year $638,652. On the reduced scale of the coming year, if the average production of the past six months is maintained, they would amount to $491,605."

The report notes that considerable progress has been made in improvement and completion of the plant. The principal work done in the year has been the installation in the power station of two additional generators of 600 kilowatts each; the completion of 100 additional coke ovens; the installation of mining machinery at Wabana for underground work, and the erection of trestles for handling and storing coal at the open-hearth and the washing plant. Preparations are being made for the erection of a plant similar to that used in the production of Bessemer steel for the preliminary treatment of pig iron.

The total sales for the year were as follows: Pig iron, 25,393 tons; billets and blooms, 17,145 tons; rails, 101,245 tons, and wire rods 45,553 tons.

ANNUAL REPORT OF THE U. S. PIPE & FOUNDRY CO.

The annual report of the United States Cast Iron Pipe & Foundry Co., made public during the week, shows the largest net earnings for any one year in the history of the company. The income account for the fiscal year ending May 31, 1906, compares with that of 1905 as follows:

	1906	1905
Gross inc	$2,053,208	
Interest etc	297,000	
Net Prof	$1,756,208	$1,234,401
Divs.	1,375,000	750,000
Surplus	$381,208	$484,401
Prev. sur	492,315	732,169
Total	$873,523	$1,216,570
Reservation	367,315	724,256
P. & L. sur	$506,208	$492,314

Net earnings also compare with $1,107,170 in 1904, with $1,228,724 in 1903 and with $711,184 in 1902. The fact of the surplus falling off is explained by the payment of an extra dividend of one per cent on preferred stock, and of three one per cent dividends on common, for the first time. The general balance sheet presents few changes from that of a year ago, the property item being $24,086,735.

At the annual meeting all the old directors were re-elected.

Liquidation Carries Stocks Down.

A liquidating movement of large proportions prevailed in the stock market of the past week and prices were carried downward all along the list. In a few cases the level touched was lower than that after the decline of the San Francisco disaster, but the average level of the market did not quite approach the point reached at that time. The market opened weak new low levels. Call money went to six per cent on Friday, the highest rate since the first of May and a violent decline continued. The secretary of the treasury announced the withdrawal of $10,000,000 of deposits from national banks. This, together with the signing of the canal bill and the railroad rate bill by the President, complicated the situation, and Saturday saw a still further sagging movement, despite a fairly good bank statement. For the week the steel issues sold about 725,000 shares, the common declining to 34 and the preferred to 99¾. Colorado Fuel & Iron, selling about 150,000 shares, declined five points. Other iron and steel stocks were little dealt in, though generally sharing in the downward movement. Total shares sold in the New York Exchange during the week were 6,026,600.

THE LEADING INDUSTRIAL SECURITIES.

	Closing Quotation June 23	Closing Quo. June 30.	Changes	Date of 1906 Ann. Meet.	Par Value	Capital Outstanding	Dividend Basis	Dividend Being Paid	Dividend Last Div. Dec.
Allis-Chalmers Co	21	17¾	—2¼	Sept.	100	19,820,000		.....	.....
Allis-Chalmers preferred	56¾	54	—2¾		100	16,150,000	7 cum	.....	Feb., 1904
American Can	6⅞	6½	— ⅜	Apr. 24	100	41,233,300		.....	.....
American Can preferred	56½	54¾	—1¾		100	41,233,300	7 cum	5 Q.	July, 1906
American Car and Foundry	38½	35½	—3⅜	June 28	100	30,000,000		.....	May, 1905
AmericanCar and Foundry preferred	100⅛	100	— ⅛		100	30,000,000	7 n. c.	7 Q.	July, 1906
American Locomotive	69	65¾	—3¼	Oct. 16	100	25,000,000		1¾	July, 1906
American Locomotive preferred	115	115	.....		100	24,100,000	7 cum	7 Q.	July, 1906
American Shipbuilding	64	64	.....	Oct. 2	100	7,600,000	4	4 Q.	Apr., 1906
American Shipbuilding preferred	106	106	.....		100	7,900,000	7 n. c.	7 Q.	Apr., 1906
American Steel Foundries	11⅝	10	—1⅝	Oct. 3	100	17,700,000		.....	
American Steel Foundries preferred	45	41½	—3½		100	17,700,000	6 cum	.....	Aug., 1905
Barney & Smith	65	65	.....	June 5	100	1,000,000		.....	June, 1894
Barney & Smith preferred	140	140	.....		100	2,500,000	8 cum	8 Q.	June 1906
Bethlehem Steel	27	25½	—1½	April 3	100	15,000,000		.....	
Bethlehem Steel preferred	88	88	.....		100	15,000,000	7 n. c.	7 Q.	May, 1906
Bullock Electric preferred	111	111	.....	Oct. 2	100	1,000,000	6	6 Q.	July, 1906
Cambria Steel	35½	33¾	—1¾	March 20	50	45,000,000	6	7 Q.	Mar., 1906
Cambria Iron	49½	49½	.....		50	8,468,000	4	4 S. A.	Apr., 1906
Colorado Fuel & Iron	50¼	45⅝	—4⅝	Oct. 15	100	30,132,000	7	.....	Apr., 1902
Wm. Cramp & Sons Ship & Eng. Bldg. Co.	18	18	.....	May 31	100	6,098,000	5	.....	Nov., 1902
Crucible Steel	12	10	—2	Oct. 17	100	25,000,000		.....	
Crucible Steel preferred	77	75	—2		100	25,000,000	7 cum	.....	June, 1906
Empire Steel	5	5	.....	Feb. 28	100	2,281,400		.....	
Empire Steel preferred	35	35	.....		100	2,500,000	5 cum	3 S. A.	July, 1906
Fay & Egan	93½	93½	.....	Feb. 20	100	1,000,000	6	6 Q.	May, 1906
Fay & Egan preferred	128½	128½	.....		100	1,000,000	7 cum	7 Q.	May, 1906
General Electric	165¾	161¼	—4½	May 8	100	48,256,050	8	8 Q.	July, 1906
International Pump	48⅜	44	—4⅜	June 5	100	12,262,500		2	July, 1905
International Pump preferred	86¼	82½	—4⅛		100	8,850,000	6 cum	6 Q.	May, 1906
Lackawanna Steel	71	71	.....	March 14	100	34,971,400		.....	
Lake Superior Corporation	19	17½	—1½	Oct. 3	100	40,000,000		.....	
Niles-Bement-Pond	130	130	.....	Feb. 7	100	5,000,000	6	6 Q.	May, 1906
Niles-Bement-Pond preferred	105	105	.....		100	2,000,000	6 cum	6 Q.	June, 1906
Otis Elevator Co	49	48	—1	March 19	100	6,350,300		2 A.	Apr., 1906
Otis Elevator Co. preferred	100	98	—2		100	5,589,500	6 n. c.	6 Q.	July, 1906
Pittsburg Coal Co	14	13½	— ½	Feb. 12	100	30,135,000		.....	
Pittsburg Coal preferred	52⅞	51⅞	—1		100	30,716,200	7	.....	Apr., 1905
Pressed Steel Car	49	44½	—4½	Feb. 21	100	12,500,000		3	Aug., 1904
Pressed Steel Car preferred	97½	96½	—1		100	12,500,000	7 n. c.	7 Q.	May, 1906
Pullman Palace Car	229¾	220	—9¾	Oct. 18	100	74,000,000		8 Q.	May, 1906
Railway Steel Spring	52	48	—4	March 1	100	13,500,000		4 S. A.	Oct., 1905
Railway Steel Spring preferred	101	100¼	— ¾		100	13,500,000	7 cum	7 Q.	June, 1906
Republic Iron & Steel	28	25¾	—2¼	Oct. 17	100	27,352,000		.....	
Republic Iron & Steel preferred	97⅛	94	—3⅛		100	20,852,000	7 cum	7 Q.	Apr., 1906
Sloss-Sheffield	72½	69	—3½	March 14	100	7,500,000	5	5	Jan., 1906
Sloss-Sheffield preferred	106½	107	+ ½		100	6,700,000	7 n. c.	7 Q.	July, 1906
Tennessee Coal & Iron	154½	150	—4½	May 15	100	22,552,800		4 Q.	Aug., 1906
U. S. Cast Iron Pipe & Foundry	49	47⅝	—1⅜	June 27	100	12,500,000		2	June, 1906
U. S. Cast Iron Pipe & Foundry preferred	94⅜	91	—3⅜		100	12,500,000	7 n. c.	7	June, 1906
U. S. Steel	36⅜	34	—2⅜	April 16	100	508,302,500		.....	Dec., 1903
U. S. Steel preferred	103½	99¾	—3¾		100	360,281,100	7 cum	7 Q.	May, 1906
U. S. Steel 5's	96⅞	96½	— ⅜		100	463,798,000	5	5 A.	
Virginia Iron, Coal & Coke	45	40	—5	Sept. 18	100	8,641,600		.....	
Westinghouse Electric	158	154	—4	June 27	50	20,996,350	10	10 Q.	July, 1906
Westinghouse Air Brake	151	147	—4	Oct. 2	50	10,990,450	20	20 Q.	July, 1906

FINANCIAL NOTES.

Recent dividend declarations include the following: Nova Scotia Steel Co., regularly quarterly, $2 on preferred, payable July 14; La Belle Iron Works, quarterly, 2 per cent, payable Aug. 1; Westinghouse Machine Co., regular quarterly, 2½ per cent, payable July 10; Vulcan Detinning Co., regular quarterly 1¼ per cent, with an extra dividend of ½ per cent on preferred, payable June 20; E. W. Bliss Co., regular quarterly, 2 per cent on preferred and 2½ per cent on common, payable July 2; Chicago Pneumatic Tool Co., regular quarterly, 1 per cent, payable July 25; Alabama Steel & Ship Building Co., regular semi-annual, 3 per cent on preferred, payable July 2; Alabama & Georgia Iron Co., 1 per cent; Cutting Car Co., regular quarterly ½ per cent, payable July 2.

NEWS FROM MANY INDUSTRIES.

New Buyers:—

The Portable Electric Tool Co., Cincinnati, O., has been incorporated with a capitalization of $30,000 by W. C. Pierce, W. C. McLean, A. K. Brookbank, C. W. Miles and O. F. Spindel.

The North Texas Foundry & Machine Co., Paris, Tex., has been incorporated with a capitalization of $25,000 by Lee Totten, J. N. Totten, C. J. Turner, of Paris, and J. H. Bright, of Houston.

The Ohio Foundry & Mfg. Co., Steubenville, O., has been organized with a capitalization of $150,000 by George E. Sharpe, Alex B. Sharpe, William L. Sharpe, M. S. McFadden and C. P. McFadden.

The D. T. Williams Valve Co., Cincinnati, O., has increased its capital stock from $100,000 to $200,000 to provide for the enlargement of its plant.

The Wisconsin Foundry Co., Milwaukee, Wis., has been incorporated with a capital stock of $20,000 by J. R. Smith, Albert E. Smith and Gerhard Mockley.

The Superior & Pittsburg Copper Co., Duluth, Minn., has been organized with a capitalization of $20,000,000 to engage in general mining and smelting operations. The incorporators are: Thomas F. Cole, W. W. Billson, Chester A. Congdon, Charles Briggs, James and Thomas Hoaston, G. R. Campbell and Peter Ruppe, all of Calumet, Mich.; C. d'Autremont Jr., of Duluth, and G. E. Toner and H. R. Rea, of Pittsburg.

The Schaefer Mfg. Co., Birmingham, Ala., has been incorporated with a capital of $50,000 to manufacture transmission machinery. The incorporators are: J. V. Schaefer, W. H. Stockham, James Weisel, John H. Adams and W. N. Johnson.

The Loucks Iron & Steel Co., Roanoke, Va., has been incorporated with a capitalization of $100,000 by Aaron Loucks, M. B. Porter, W. H. Fetter and D. S. Loucks, all of Scottdale, Pa.

New Construction:—

The new plant of the Connellsville Machine & Car Co., Connellsville, Pa., is rapidly nearing completion. Three large buildings are to replace those which were burned about a year ago. These are of steel and brick construction with slate roofs, and are being built from designs by the Osborn Engineering Co., of Cleveland. Electric power will be used in all departments and four large traveling cranes will provide handling facilities. The product of the Connellsville Machine & Car Co. includes practically everything in the car and machine line used about the mines and coke ovens in that region.

Extensive improvements are to be made at the plant of the Middletown Car Works, Middletown, Pa. One of the old shops will be altered so that it can be utilized as an erecting shop, and a new car shop, 70 x 400 feet, with a press shop 70 x 200 feet, will be erected. The shops will be equipped with electric traveling cranes and pillar and jib cranes. The machinery equipment will consist of hydraulic presses, gate shears, punches, hydraulic and pneumatic riveters, flanging press, heating furnaces and other special tools. Nearly all of the machinery will be electrically driven and there will be a complete layout of hydraulic, pneumatic and steam main service to all parts of the shop. There will also be three electric yard cranes for handling material. When completed the shops will have a capacity of from 15 to 20 steel cars per day, depending on the particular type. The construction and equipment will be modern and up-to-date in every respect. J. B. Taylor, 56 Pine street, New York, is engineer in charge.

Extensive improvements are already under way at the plant of the Princess Furnace Co., Inc., Glen Wilton, Va. Various other improvements will be made in the course of the next year or two, but the company states that its first aim will be to maintain the high reputation which its foundry iron has long enjoyed.

The National Lock Co., Rockford, Ill., manufacturing cabinet locks and sheet metal specialties, has increased its capital stock from $50,000 to $150,000 to accommodate the rapid growth of its business. The three story addition to its plant, 64 x 208 feet, is nearing completion. Practically all of the additional tools required are special and have been ordered.

The Bridgeport Malleable Iron Co., Bridgeport, Conn., is receiving estimates on an extension to its foundry, 71 x 313 feet.

Further details of the manufacturing colony to be established at Oakley by a number of Cincinnati concerns have developed since the announcement of the project in our issue of June 28. The enterprise, it is stated, will result in the expenditure of at least $500,000 in buildings within the next 18 months, with a corresponding sum for later improvements. Each of the four plants interested is to take ten acres of the new site. The remaining 60 acres will be in charge of a holding corporation, soon to be incorporated with $100,000 capital under the name of the Factory Colony Co. F. A. Geier, president of the Cincinnati Milling Machine Co., and M. H. Davis, president of the Central Trust & Safe Deposit Co., will be among the incorporators. The initial works of the Cincinnati Milling Machine Co., it is understood, will cost $150,000. The tract will be laid out by an architect, and the question of housing the workmen will receive careful consideration.

The Pittsburg Valve & Fittings Co. has completed a warehouse 70 x 200 feet at its Barberton, O., plant, and has a foundry building 160 x 350 feet well under way, though delayed deliveries of structural steel are interfering somewhat with the work. L. D. Castle is superintendent.

The Interstate Mfg. Co., Oskaloosa, Ia., is to erect a building 50 x 100 feet for the manufacture of furnaces.

The Gerson-Carey Co., Lansing, Mich., has purchased a site and is having plans prepared for a new plant.

Billings & Spencer, Hartford, Conn., have let the contract for a main factory 55 x 240 feet, with two large bays for light machine work. It is expected that the structure will be ready for occupancy by Nov. 1. The company manufactures machine forgings, and heavy equipment is to be installed.

Extensive repairs are being made at the Benwood plant of the Wheeling Steel & Iron Co., Wheeling, W. Va., during a mid-summer shutdown. Furnaces No. 1, 2 and 3, of the plate department, are to be rebuilt, the puddling furnaces will be repaired and considerable remodeling will be done.

The Solvay Foundry Co., Syracuse, N. Y., recently incorporated, is receiving bids for a foundry structure costing about $100,000, for the manufacture of malleable iron castings.

The Globe Foundry Co., Port Chester, N. Y., is to erect a new plant at Huntington, W. Va. Plans are being prepared for a large molding shop of concrete, steel and glass, and a number of other buildings. William A. Mills, vice president of the company, is in charge of the property.

The Continental Car & Equipment Co., 17 Battery Place, New York, will erect an extensive plant on a site recently purchased at Louisville, Ky., to supply the trade in that territory. The main structure, 100 x 270 feet, and a number of smaller buildings are being equipped, and a large equipment of heavy tools will be purchased. N. B. Porter, who is to be general manager, is located at the Seelbach, Louisville, Ky.

The Rust Boiler Co. is to erect a new

plant at Midland, Pa., for the manufacture of the Rust water tube boiler. The main structure will be 100 x 500 feet, of steel and brick with power plant, office buildings, pattern shops and warehouse. Contracts for the construction have been let to the Riter-Conley Co., of Pittsburg. The Rust company's officers are in the National Bank building, Pittsburg.

The Amherst Malleable Iron Co., Ltd., Amherst, N. S., has been incorporated with $100,000 capital stock to manufacture malleable iron castings. An extensive plant of brick and steel construction is being erected, and its operation will begin in early fall. N. Curry is president, with G. S. Crossman, secretary and treasurer.

The Fulton Co., Knoxville, Tenn., is adding to its works in West Knoxville by the erection of a foundry.

The Union Pacific railroad shops at Omaha are to be replaced with modern structures at a cost of almost $800,000. The company is completing a new office, stripping shed, iron house and blacksmith shops, is to erect an L-shaped building, 342 x 520 feet, and has a number of other structures in contemplation.

General Industrial Notes:—

The receivership recently ordered for the Keefer-Heart Iron & Steel Co., Alexandria, Ind., has been raised by judicial order and the receiver has been discharged. The interest of W. D. Keefer, who originally applied for the receiver, has been purchased by other stockholders.

The Norton Emery Wheel Co., Worcester, Mass., has changed its corporate title to the Norton Co. This change is due to its success in the manufacture of alundum, an artificial abrasive which the company is now using exclusively in the manufacture of grinding wheels. This product is made in electric furnaces of the Norton Co., at Niagara Falls, N. Y., where the plant has been doubled during the past year to supply the Worcester works exclusively. The process consists in taking the purest amorphous oxide of aluminum found in nature, known as the mineral bauxite, purifying it and melting it in an electric furnace in a large homogeneous uniform bath. Upon cooling this molten fluid solidifies and crystallizes in solid masses of alundum of great purity and absolute uniformity throughout, and of a hardness greater than any known substance except the diamond. A temperature estimated at between 6,000 to 7,000 degrees Fahr. is required. The process of manufacturing alundum was awarded the grand prize at the St. Louis Exposition.

F. H. Murray, Tacoma, Wash., receiver of the Western Iron, Coal & Coke Co., reports the sale of the company's mine and other property in Pierce county, to Frank W. Hale for $114,000.

Morris Adler and associates have bought 100 acres of mineral land near Bessemer, Ala., and organized a corporation to be known as Washington & Co., with a capital of $50,000. This land lies adjacent to the Tennessee-Republic holdings recently secured, and will be probed for minerals.

The Kuhner Engine & Machine Co., Moline, Ill., has organized by the election of the following officers: Herman E. Kuhner, president and manager; William L. Ludolph, vice president; Harry E. Miller, secretary and treasurer; Morris S. Heaghy, Otto Rudert and E. J. Sommers, additional directors. The company will manufacture the Kuhner gasoline engine, heretofore made by the East Davenport Machine & Novelty Works, and in addition will handle a general line of machine supplies.

The Star Furnace, Jackson, O., will be blown in the last of this week, after a month's idleness for relining.

The Contractors' Tool Co., 704 Arch street, Philadelphia, has been incorporated to take over the business heretofore carried on under that name and to increase the capital and extend the business. Considerable foundry equipment will be purchased. C. P. Calver is manager.

Fires:—

The Sternbergh plant of the American Iron & Steel Co., Reading, Pa., was damaged to the extent of $1,200 by fire June 19.

The foundry and machine shop of James G. Newberry, Coxsackie, N. Y., was destroyed by fire June 15, with a loss of $17,000.

The plant of the American Car & Foundry Co., at Memphis, Tenn., was threatened with destruction by fire June 23. Loss, however, was confined to the repair shed, containing sixteen cars, and to a part of the foundry. Damage is placed at $15,000.

TRADE PUBLICATIONS.

W. W. Lindsay & Co., Harrison building, Philadelphia, have issued a new descriptive catalog of foundry chaplets and anchors. It contains besides an interesting introduction a discussion of the qualities which a good chaplet should have. It shows in half tone the different kinds of chaplets and anchors supplied and a full list of dimensions and prices. The company had an exhibition of the goods described in the catalog at the Cleveland convention of the American Foundrymen's Association, and distributed heavy chaplets which form very attractive and desirable paper weights.

The De La Vergne Machine Co., New York, has brought out a catalog describing the Hornsby-Akroyd oil engine. This engine is designed to work on a four-stroke cycle, and has been highly successful. The engines listed are built in sizes ranging from four to 250 horsepower, and the catalog shows them in use in a large number of services. Some of these that may be noted as part of the power installation of the Baldwin Locomotive Works; direct connected to electric generators; direct connected to power pumps; the driving of refrigerating plants; the providing of electric current for lighthouses; the driving of air compressors; furnishing power in portable and semi-portable power plants, etc. A number of tests of this engine are given and considerable information relating to gas and oil engines is also incorporated in the catalog.

The Allis-Chalmers Co., Milwaukee, is distributing bulletin 1604, entitled "Allis-Chalmers Steam Turbines and Generators." This bulletin describes, in considerable detail, the construction of the Allis-Chalmers steam turbine and also the generator used in connection with it.

The Asbestos Protected Metal Co., Canton, Mass., has issued a 25-page booklet describing Asbestos Protected Metal, which is a material for roofing, sidings and ceilings, and which is stated to be fireproof, waterproof and lasting. The material consists of a sheet of annealed steel, either flat or corrugated, which is dipped at high temperature into a solution composed principally of pure asphalt, a sheet of asbestos then being applied to each side of the steel.

The Ingersoll-Rand Co., New York, has recently brought out a number of new publications; entitled, respectively, "The Imperial Power Driven Air Compressor," "The Rand Rock Drill and Mountings," and "The Imperial Piston Drills." The first is devoted to a description of the Imperial type 11 air compressor and gives a detailed description of the various parts. The second booklet describes rather exhaustively the Rand rock drill and gives the details of construction, specifications and dimensions of a large line of these tools. The Imperial piston drill described in the third catalog is a portable drill for shop use, for drilling, reaming and tapping. Eight different sizes are listed, ranging in capacity from 7/8-inch to a three-inch twist drill.

The Utica Drop Forge & Tool Co., Utica, New York, has issued a catalog entitled, "Plier Palmistry." This describes an extensive line of pliers and nippers for farmers, electricians, machinists, loom fixers, plumbers, jewelers, etc.